```
*********************************************************************
.....................................................................
.....................................................................
..   SECTION 6                                                    ..
..                                                               ..
..   DETAILED CODING AND TEXTUAL EXPLANATIONS                    ..
.....................................................................
.....................................................................
```

        IN THIS SECTION IS GIVEN THE FULL TEXT OF ALL QUESTIONS IN ALL
QUESTIONNAIRES AND OTHER DATA SOURCES, TOGETHER WITH THE FULL TEXTS
OF THE RESPONSE ALTERNATIVES, THEIR NUMERIC CODES, AND
ABBREVIATED (16-CHARACTER) VERSIONS SUITABLE FOR STATISTICAL
PROGRAM LABELS.  SOME OF THE INTERNATIONAL STANDARD INSTRUCTIONS
TO THE RESPONDENTS FOR GROUPS OF QUESTIONS (E.G., ATTITUDE SCALES)
ARE ALSO GIVEN.

        IN ADDITION TO THE INTERNATIONAL STANDARD INFORMATION,
WHICH CORRESPONDS MORE OR LESS TO THE INTERNATIONAL CODEBOOKS,
DEFINITIONS ARE GIVEN OF THE TEXTS AND RESPONSE CODINGS OF NATIONAL
OPTION VARIABLES, AND NOTES ON NATIONAL EXCEPTIONS AND VARIATIONS
FROM INTERNATIONAL FORMS ARE PRESENTED.  THIS IS DONE IN SUCH A
WAY THAT A CODEBOOK SPECIFIC TO A NATIONAL STUDY CAN BE DERIVED.

        CONCERNING THE COGNITIVE ITEMS, THIS SECTION CONTAINS
THE FORMS FOR ELICITING THE OTL AND CALCULATOR QUESTIONS, AND
THE FULL TEXTS OF THE NATIONAL OPTION COGNITIVE ITEMS (BUT
NOT THE INTERNATIONAL COGNITIVE ITEMS).

```
.....................................................................
.     LINKAGE TO OTHER TABLES AND RESPONSE DATA                     .
.                                                                  .
.        - QUESTIONNAIRE RESPONSES                                 .
.              -VARIABLE NAME IS THE SAME HERE AND IN              .
.               TABLE 4                                            .
.        - NATIONAL OPTION VARIABLES (E.G., SAMPLING)             .
.              -VARIABLE NAME APPEARS HERE AND IN                  .
.               TABLE 4... SECOND LETTER OF NAME IS 'Z'           .
.        - ANCILLIARY QUESTIONS ASKED USING THE COGNITIVE         .
.          TEST ITEMS.                                             .
.              -TEXT AND ALTERNATIVES APPEAR HERE WITH THE        .
.               FOLLOWING NAMES...                                 .
.                    TITEME = TEACHER ESTIMATION QUESTION         .
.                    TITEMT = TEACHER TAUGHT THIS YEAR QUESTION   .
.                    TITEMW = TEACHER WHY NOT QUESTION            .
.                    XITEMT = STUDENT PRETEST TAUGHT LAST YEAR    .
.                             QUESTION                             .
.                    XITEMC = STUDENT PRETEST CALCULATOR QUESTION..
.                    YITEMT = STUDENT POSTTEST TAUGHT THIS YEAR   .
.                             QUESTION                             .
.                    YITEMC = STUDENT POSTTEST CALCULATOR         .
.                             QUESTION                             .
.        - NATIONAL OPTION COGNITIVE ITEM TEXT AND ALTERNATIVES   .
.              -VARIABLE NAME IS 'Z' PLUS THE 3-DIGIT CODE        .
.               IN THE RANGE 200-999 FROM TABLE 3                 .
.....................................................................
```

        THE INFORMATION PRESENTED HERE IS INTENDED PRIMARILY FOR

RECONSTRUCTION OF THE EXACT CONTEXTS, TEXTS, AND CODINGS OF
THE VARIABLES AS DEFINED IN THE QUESTIONNAIRE TABLE
(SECTION 4 ABOVE), AND OF THE OTL AND CALCULATOR QUESTIONS.
THE LINKAGE IS THROUGH THE VARIABLE NAMES.


```
.................................................................
.     TABLE FORMAT                                              .
.                                                               .
.         COLUMN 1 = BEGINNING OF A VARIABLE NAME OR SPECIAL CODE,.
.                    TO BE FOLLOWED BY SPACE AND TEXT           .
.                                                               .
.                  = BLANK (SPACE) TO INDICATE CONTINUATION     .
.                    OF TEXT                                    .
.                                                               .
.                  = PERIOD (.) TO INDICATE COMMENTARY          .
.................................................................
```

     THE INFORMATION IS FREE-FIELD, EXCEPT FOR ONE SIMPLE
CONVENTION.  EACH LOGICAL RECORD BEGINS WITH A NAME OR SPECIAL
CODE BEGINNING IN POSITION 1.  THE RECORD CONTINUES ONTO ADDITIONAL
LINES THAT HAVE BLANKS (SPACES) IN POSITION 1 UNTIL A NEW RECORD
BEGINS. EXTRA SPACES ARE INCLUDED, ESPECIALLY AT THE BEGINNING
OF THESE CONTINUATION LINES, TO IMPROVE READABILITY.  ALSO, ANY
LINE BEGINNING WITH A PERIOD (.) IS A COMMENT AND CAN BE IGNORED.


```
.................................................................
.     VARIABLE DEFINITION                                       .
.                                                               .
.         - NAME OF THE VARIABLE (1-8 LETTERS AND DIGITS,       .
.           BEGINNING WITH A LETTER, STARTING IN COLUMN 1)      .
.         - SPACE                                               .
.         - TEXT OF THE VARIABLE                                .
.         - RESPONSE ALTERNATIVE TEXT AND CODES                 .
.                                                               .
.     FOR EXAMPLE...                                            .
.                                                               .
.         SAREA  WHICH OF THE FOLLOWING BEST DESCRIBES THE      .
.             COMMUNITY OF THE SCHOOL?  /1 RURAL /2 SUBURBAN    .
.             /3 MAJOR METROPOLITIAN AREA =MAJOR METRO AREA     .
.................................................................
```

     THE BASIC LOGICAL RECORD IN THE TABLE ASSOCIATES WITH A NAMED
VARIABLE (I.E., A QUESTION FROM A QUESTIONNAIRE OR SOME OTHER ITEM
OF DATA COLLECTION) A TEXT AND RESPONSE ALTERNATIVES.   THE
RESPONSE ALTERNATIVES ARE NOT GIVEN, HOWEVER, FOR NUMERIC VARIABLES
(TIMES, NUMBERS, ETC.) BUT ONLY FOR QUESTIONS WHERE THE
RESPONDENT WAS GIVEN A LIST OF CHOICES (OR, AS IN THE CASE
OF PARENT'S OCCUPATION, WHERE THE NATIONAL CENTRE CODED
INTO A SPECIAL LIST OF ALTERNATIVES).


```
.................................................................
.     DEFINITION OF RESPONSE ALTERNATIVE CODE, TEXT, AND LABEL  .
.                                                               .
.         - SLASH (/)                                           .
.         - NUMERIC CODE FOR THE ALTERNATIVE                    .
.         - SPACE                                               .
.         - THE TEXT OF THE ALTERNATIVE                         .
.         - EQUAL (=)                                           .
.         - CODE FOR PROGRAM LABELS (UP TO 16 LETTERS, NUMBERS  .
```

```
.          AND SPACES)                                              .
.............................................................
```

THIS IS REPEATED FOR EACH ALTERNATIVE.  THE EQUAL SIGN AND THE CODE
ARE OMITTED IF THE FULL TEXT IS AN APPROPRIATE LABEL.

```
.............................................................
.     ASTERISK-CODE CONVENTION                                     .
.                                                                  .
.         - DEFINE A PSEUDOVARIABLE WITH A NAME BEGINNING          .
.           WITH AN ASTERISK                                       .
.         - ASSOCIATE IT WITH A TEXT                               .
.         - INVOKE THE TEXT WITHIN THE DEFINITION OF A REAL        .
.           VARIABLE BY GIVING THE ASTERISK-NAME OF                .
.           THE PSEUDOVARIABLE                                     .
.                                                                  .
.     FOR EXAMPLE...                                               .
.                                                                  .
.         *YESNO   /1 YES /2 NO                                    .
.         HOD      ARE YOU A HEAD OF DEPARTMENT? *YESNO            .
.         SCITEA   DO YOU TEACH SCIENCE? *YESNO                   .
.         OTHCRS   DO YOU TEACH OTHER COURSES? *YESNO             .
.............................................................
```

    TO SAVE SPACE AND AVOID REDUNDANCY, THIS SIMPLE CONVENTION
IS USED WHEN A SERIES OF QUESTIONS HAS COMMON TEXT OR COMMON
ALTERNATIVES.  A LOGICAL RECORD IS USED TO ASSOCIATE
A STRING OF TEXT WITH A SPECIAL CODE (PSEUDOVARIBLE) BEGINNING WITH AN
ASTERISK (*).  THEN IN SUBSEQUENT VARIABLE DEFINITIONS, THE
SPECIAL CODE IS USED TO IMPLY INCLUSION OF THE ASSOCIATED
TEXT.  THIS IS NOT DONE RECURSIVELY.

```
.............................................................
.     SURROUNDING TEXT                                             .
.                                                                  .
.         - NUMBER 1-9 IN POSITION 1, INDICATING PRIORITY          .
.           OF TEXT IN APPLYING TO VARIABLES THAT FOLLOW           .
.         - SPACE                                                  .
.         - TEXT                                                   .
.                                                                  .
.     FOR EXAMPLE...                                               .
.                                                                  .
.     7   WHICH OF THE FOLLOWING ACTIVITIES HAS THE               .
.         TARGET CLASS DONE?                                       .
.............................................................
```

    TEXT, SUCH AS INTRODUCTIONS AND EXPLANATIONS, INCLUDED
IN THE INSTRUMENTS BUT APPLYING TO SEVERAL QUESTIONS IS
INDICATED HERE IN SPECIAL RECORDS THAT ARE LABELLED WITH
A NUMBER WHICH DEFINES A BRACKETING HIERARCHY ACROSS THE TABLE,
SO THAT THE TEXT FROM SUCH A RECORD APPLIES TO ALL THE
FOLLOWING VARIABLES, UNTIL ANOTHER RECORD WITH A EQUAL OR
HIGHER NUMBER IS ENCOUNTERED.

```
.............................................................
.     EXPLANATORY MATERIAL                                         .
.                                                                  .
.         - THE SPECIAL BRACKET '(*'                               .
.         - ANY TEXT                                               .
.         - THE SPECIAL BRACKET '*)'                               .
```

```
.                                                                    .
.     FOR EXAMPLE...                                                  .
.                                                                    .
.          (* NATIONAL CENTRES CONSTRUCTED THIS CODED RESPONSE *)  .
......................................................................
```

     WITHIN THE TEXT OF A QUESTION OR ITS ALTERNATIVES OR WITHIN
THE SURROUNDING TEXT, EXPLANATORY MATERIALS MAY BE INSERTED
WITHIN SPECIAL BRACKETS FORMED WITH PARENTHESES AND
ASTERISKS, AS FOLLOWS... (* EXPLANATORY TEXT *).  THIS
MATERIAL WAS NOT SEEN BY THE RESPONDENT.

```
......................................................................
.     SPECIAL SYMBOLS                                                .
.                                                                    .
.     '#'  MARKS THE POSITION OF A DIAGRAM OR EXAMPLE IN THE   .
.          ORIGINAL INSTRUMENT BUT NOT REPRODUCED IN THIS      .
.          TABLE                                               .
.     '//' MEANS '/' (AVOIDING CONFUSION WITH '/' USED TO      .
.          SEPARATE ALTERNATIVES)                              .
.     '==' MEANS '=' (AVOIDING CONFUSION WITH '=' USED TO      .
.          SEPARATE ALTERNATIVE CODES)                         .
.     '##' MEANS '#' (AVOIDING CONFUSION WITH  '#' USED TO     .
.          MARK DIAGRAMS AND EXAMPLES)                         .
.     '**' MEANS '*' (AVOIDING CONFUSION WITH '*' USED TO      .
.          IDENTIFY PSEUDOVARIABLES)                           .
......................................................................
```

THE POUND SIGN (#) IS USED FOR MARKING THE POSITION OF
MATERIAL THAT IS DIFFICULT TO DEPICT WITH STANDARD TYPOGRAPHY.
THE CONVENTION FOR INCLUDING A TRUE SLASH, ASTERISK, EQUAL OR
POUND SIGN IN THE TEXT IS TO DOUBLE THE SYMBOL. FOR EXAMPLE,
FOR A TRUE SLASH, DOUBLE SLASH (//) IS INCLUDED.

```
......................................................................
.     NATIONAL EXPLANATORY MATERIAL                                  .
.                                                                    .
.     - SPECIAL BRACKET '(+NN' OR '(+II,JJ', ETC.              .
.       IDENTIFYING COUNTRY NN OR COUNTRIES II AND JJ, ETC.    .
.     - TEXT SPECIFIC TO THAT COUNTRY OR THOSE COUNTRIES       .
.     - SPECIAL BRACKET '+)'                                   .
.                                                                    .
.     - SPECIAL BRACKET '(-NN' OR '(-II,JJ', ETC.              .
.       IDENTIFYING COUNTRY NN OR COUNTRIES II AND JJ, ETC.    .
.     - TEXT EXCLUDED FROM THAT COUNTRY OR THOSE COUNTRIES     .
.     - SPECIAL BRACKET '-)'                                   .
.                                                                    .
.     FOR EXAMPLE                                                    .
.                                                                    .
.     (+97 IN ZEMBLA ONLY THE FIRST TWO OPTIONS WERE USED +)  .
.     (-97 THREE OPTIONS ARE USED -)                           .
......................................................................
```

     THE SYSTEM AS DESCRIBED PREVIOUSLY DEFINES THE INTERNATIONAL
STANDARD FORM OF THE INSTRUMENTATION AND CODING.  IN ADDITION,
THERE MAY BE NATIONAL VARIATIONS, MODIFICATIONS, NOTES, ETC.
THIS MAY BE DONE BY ADDING SPECIAL PARENTHETICAL COMMENTARY
WITHIN THE TEXT OF A QUESTION, ITS ALTERNATIVES, OR THE
SURROUNDING TEXT.  INSTEAD OF ENCLOSING THE COMMENTARY IN
THE (* ... *) BRACKETS, BRACKETS OF THE FORM (+NN ... +) ARE USED,
TO INDICATE THE COMMENTARY APPLIES ONLY TO COUNTRY WITH CODE NN.

CONVERSELY, THE BRACKETS (-NN ... -) MAY BE USED TO SHOW THAT
THE COMMENTARY APPLIES TO ALL COUNTRIES EXCEPT THAT WITH
CODE NN.  IF THE COMMENTARY APPLIES TO SEVERAL COUNTRIES,
OR IS TO BE EXCLUDED FOR SEVERAL COUNTRIES, THERE MAY BE
A LIST OF CODES SEPARATED BY COMMAS, FOR EXAMPLE, (+II,JJ,KK ... +)
OR (-II,JJ,KK ... -).

```
..............................................................
.      NATIONAL SUBSTITUTION DEFINITIONS                      .
.                                                             .
.        (+NN+) AT THE BEGINNING OF ANY LOGICAL RECORD        .
.               IF IT APPLIES TO JUST COUNTRY NN              .
.        (-NN-) AT THE BEGINNING IF THE RECORD DOES NOT APPLY .
.               TO COUNTRY NN                                 .
.        (+II,JJ+) IF IT APPLIES TO COUNTRIES II AND JJ ONLY  .
.        (-II,JJ-) IF IT DOES NOT APPLY TO II AND JJ          .
.        ETC.                                                 .
.                                                             .
.    FOR EXAMPLE...                                           .
.                                                             .
.        (+97+)QZ97ST ZEMBLAN STRATIFICATION. /1 RURAL UNITARY.
.             /2 RURAL GRADED /3 TOWNS /4 CITY PUBLIC         .
.             /5 CITY PRIVATE                                 .
..............................................................
```

    ON THE FRONT OF ANY LOGICAL RECORD, THERE MAY BE ADDED A
QUALIFICATION, CONSISTING OF A COUNTRY CODE, OR LIST OF COUNTRY
COUNTRY CODES SEPARATED BY COMMAS, ENCLOSED IN (+ +) OR (- -)
BRACKETS.  FOR EXAMPLE (+23+) MARKS A RECORD AS APPLYING ONLY TO
COUNTRY 23, AND (-41,56-) MARKS A RECORD AS APPLYING TO ALL
COUNTRIES EXCEPT 41 AND 56.  THE LOGICAL RECORD DEFINES
A VARIABLE, AN ASTERISK-CODE TEXT, OR SURROUNDING TEXT
JUST FOR THE LIMITED SET OF COUNTRIES. THERE SHOULD BE NO
CASES WHERE A NAME IS DOUBLY DEFINED.

```
--------------------------------------------------------------
..............................................................
.                    POPULATION VARIABLES                     
..............................................................
9         POPULATION VARIABLES.
PCOUNT    COUNTRY.
          /10 ARGENTINA
          /11 AUSTRALIA
          /15 BELGIUM FLEMISH
          /16 BELGIUM FRENCH
          /20 BRAZIL
          /21 CANADA ALBERTA
          /22 CANADA BRITISH COLUMBIA =CANADA B C
          /23 CANADA MANITOBA
          /24 CANADA NEWFOUNDLAND AND LABRADOR =CANADA NWFL LAB
          /25 CANADA ONTARIO
          /26 QUEBEC
          /27 CHILE
          /30 COLOMBIA
          /31 COSTA RICA
          /34 DOMINICAN REPUBLIC =DOM REPUBLIC
          /35 ECUADOR
          /37 ENGLAND
          /39 FINLAND
          /40 FRANCE
```

```
              /41 GERMANY FEDERAL REPUBLIC =GERMANY FR
              /43 HONG KONG
              /44 HUNGARY
              /45 INDIA
              /46 INDONESIA
              /47 IRAN
              /49 IRISH REPUBLIC
              /50 ISRAEL
              /51 ITALY
              /52 IVORY COAST
              /54 JAPAN
              /57 KOREA SOUTH
              /59 LUXEMBOURG
              /61 MEXICO
              /62 NETHERLANDS
              /63 NEW ZEALAND
              /64 NIGERIA
              /68 POLAND
              /70 PUERTO RICO
              /72 SCOTLAND
              /74 SPAIN
              /75 SWAZILAND
              /76 SWEDEN
              /79 THAILAND
              /81 USA
              /82 VENEZUELA
.................................................................
.                       STRATUM VARIABLES
.................................................................
9         STRATUM VARIABLES.
*SLEVEL   (*NATION-SPECIFIC*)
QSTRAT    PRINCIPAL STRATIFICATION CODE. *SLEVEL
.................................................................
.                       SCHOOL QUESTIONNAIRE
.................................................................
 (+22 BRITISH COLUMBIA MADE SEVERAL MINOR CHANGES TO THE INTRODUCTIION
   SO THAT THE QUESTIONNAIRE WAS MORE RELEVANT TO THE B C SITUATION+)
9         SCHOOL QUESTIONNAIRE
7         SECTION A - TO BE COMPLETED BY SCHOOL PRINCIPAL
SAREA     WHICH OF THE FOLLOWING BEST CHARACTERIZES THE COMMUNITY SERVED
            YOUR SCHOOL?
            /1 RURAL
            /2 SUBURBAN
            /3 URBAN
            /4 URBAN-SUBURBAN  =URBAN SUBURBAN
            /5 INNER CITY METROPOLIS (I.E., FOR CITIES WITH A TOTAL
            POPULATION GREATER THAN HALF A MILLION) =INNER CITY METRO
(+15 BELGIUM(FL) CHANGED TO:
     /1 URBAN
     /2 SUBURBAN
     /3 RURAL
     /4 URBAN + SUBURBAN
     /5 URBAN + RURAL
     /6 SUBURBAN + RURAL
     /7 URBAN + SUBURBAN + RURAL
RECODED ON TABLES: /1  = 3
                   /3  = 1
                   /5  = 3
                   /6  = 2
                   /7  = 4+)
(+54 JAPAN ADDED CODE 6 - UNDECIDED+)
```

```
2              WHAT IS THE TOTAL ENROLMENT OF FULL-TIME (OR FULL-TIME
               EQUIVALENT) SECONDARY STUDENTS IN YOUR SCHOOL?
SENROLB   BOYS
SENROLG   GIRLS
2              WHAT IS THE NUMBER OF POPULATION A STUDENTS IN YOUR SCHOOL?
(+22 BRITISH COLUMBIA CHANGED "POPULATION A" TO "GRADE 8" FOR ALL
PARTS OF THIS QUESTION+)
SAPOPB    BOYS
SAPOPG    GIRLS
2              WHAT IS THE NUMBER OF POPULATION A STUDENTS WHO DO NOT TAKE A
               MATHEMATICS COURSE IN YOUR SCHOOL?
SNOMTHB   BOYS
(+40 FRANCE DELETED THIS VARIABLE,WITH THE COMMENT THAT ALL POP A
STUDENTS TAKE MATHEMATICS+)
(-54 JAPAN DELETED: 99% CODED 0; ONE SCHOOL APPARENTLY HAS 320 BOYS
NOT TAKING MATHEMATICS. THIS COULD BE A CODING ERROR.-)
(-54 JAPAN CODED 999 BUT PROBABLY MEANT TO BE "0". RECORDED ON TABLE
AS SUCH-)
SNOMTHG   GIRLS
(-54 JAPAN CODED 999 BUT PROBABLY MEANT TO BE "0". RECORDED ON TABLE
AS SUCH-)
2
STCHS     WHAT IS THE NUMBER OF THE FULL-TIME (OR FULL-TIME EQUIVALENT)
               TEACHING STAFF IN YOUR SCHOOL?
2              HOW MANY OF THE TEACHING STAFF ARE INVOLVED IN TEACHING ONE OR
               MORE MATHEMATICS CLASSES?
SSOMMM    MALES
SSOMMF    FEMALES
2              HOW MANY OF THE TEACHING STAFF TEACH MATHEMATICS EXCLUSIVELY?
SALLMM    MALES
SALLMF    FEMALES
2              HOW MANY OF THOSE TEACHING MATHEMATICS ARE FULLY QUALIFIED
               MATHEMATICS SPECIALISTS?
SSPECM    MALES
(+22 BRITISH COLUMBIA CHANGED THIS QUESTION TO:
"HOW MANY OF THOSE TEACHING MATHEMATICS HAVE TAKEN MATHEMATICS
AS A MAJOR OR AS A CONCENTRATION IN THEIR TEACHER TRAINING PROGRAM?"+)
(+63 NEW ZEALAND CHANGED "THOSE TEACHING MATHEMATICS" TO "THOSE
TEACHING MATHEMATICS AT FORM 3 LEVEL"+)
SSPECF    FEMALES
(+22 BRITISH COLUMBIA CHANGED THIS QUESTION TO:
"HOW MANY OF THOSE TEACHING MATHEMATICS HAVE TAKEN MATHEMATICS
AS A MAJOR OR AS A CONCENTRATION IN THEIR TEACHER TRAINING PROGRAM?"+)
(+63 NEW ZEALAND CHANGED "THOSE TEACHING MATHEMATICS" TO "THOSE
TEACHING MATHEMATICS AT FORM 3 LEVEL"+)
2
SDAYSYR   HOW MANY OFFICIAL SCHOOL DAYS ARE THERE PER YEAR?
(-15 BELGIUM(FL) PRECODED  AT NAT. CENTRE-)
(-40 FRANCE DELETED THIS VARIABLE, AND POST-CODED 185 FOR ALL SCHOOLS-)
SSCHPER   WHAT IS THE AVERAGE NUMBER OF PERIODS PER SCHOOL DAY?
(-15 BELGIUM(FL) PRECODED  AT NAT. CENTRE-)
(+54 JAPAN CHANGED QUESTION: ANSWERS GIVEN IN PERIODS//WEEK NOT
PERIODS//DAY**.N.B DIVIDE BY 5.5 NOT 5**: CORRECTED ON TABLE.+)
SPERLEN   WHAT IS THE AVERAGE LENGTH OF EACH PERIOD IN MINUTES?
(-15 BELGIUM(FL) PRECODED  AT NAT. CENTRE-)
SCALSUB   IN YOUR SCHOOL FOR POPULATION A, IN WHICH SUBJECT(S) IS THE USE
               OF CALCULATORS ENCOURAGED?
               /1 NONE
               /2 MATHEMATICS ONLY
               /3 SCIENCE ONLY
               /4 MATHEMATICS AND SCIENCE =MATH AND SCIENCE
```

```
                    /5 ALL OR MOST SUBJECTS WHERE USAGE IS APPROPRIATE =ALL OR
                    MOST
(+22 BRITISH COLUMBIA CHANGED "POPULATION A" TO "GRADE 8"+)
7           SECTION B - TO BE COMPLETED BY HEAD OF MATHEMATICS DEPARTMENT
SMEET       HOW FREQUENTLY ARE MEETINGS OF THE MATHEMATICS TEACHERS HELD IN
                    THE SCHOOL?
                    /1 NEVER
                    /2 LESS FREQUENTLY THAN ONCE A SEMESTER OR TERM =INFREQUENT
                    /3 ONCE A TERM OR SEMESTER =ONCE A TERM
                    /4 ONCE EVERY MONTH
                    /5 ONCE EVERY TWO WEEKS =FORTNIGHTLY
                    /6 ONCE A WEEK OR MORE FREQUENTLY =WEEKLY OR MORE
(+15 BELGIUM(FL) CHANGED CATEGORIES TO:
     /6 = 2 + 3
     /7 = 3 + 4
     /8 = 1 + 2+)
(+54 JAPAN USED BOTH "TERMS" AND "SEMESTERS" IN /3; SO IT IS NOT
CLEAR WHICH THE RESPONDENTS REFERRED TO+)
SDOWHAT     WHICH OF THE FOLLOWING ACTIVITIES OCCUPIES MOST OF THE TIME AT
                    THE MATHEMATICS TEACHERS' MEETINGS?
                    /1 ORGANIZATIONAL AND ADMINISTRATIVE MATTERS =ADMINISTRATION
                    /2 CONTENT TO BE TAUGHT =CONTENT
                    /3 TEACHING STRATEGIES =TEACHING
                    /4 PROFESSIONAL DEVELOPMENT OF TEACHERS =PROF DEVELOPMENT
(+15 BELGIUM(FL) ADDED CODE SUCH THAT:
     /5 = OTHER ACTIVITIES(PLEASE SPECIFY)+)
*CALPOL     /1 NO POLICY FORMULATED. TEACHERS ALLOW USE AS THEY SEE FIT
                    =NO POLICY
                    /2 STUDENTS ARE FORBIDDEN TO USE CALCULATORS IN THE CLASSROOM
                    = FORBIDDEN
                    /3 STUDENTS MAY USE CALCULATORS, BUT THEY ARE NOT PROVIDED BY
                    THE SCHOOL =PERMITTED
                    /4 CALCULATORS ARE PROVIDED BY THE SCHOOL, BUT USED ONLY
                    RARELY IN THE CLASSROOM =PROVIDED LOW USE
                    /5 CALCULATORS ARE PROVIDED BY THE SCHOOL AND ARE USED
                    FREQUENTLY IN THE CLASSROOM =PROVIDED USED
                    /6 QUESTION DOES NOT ARISE (E.G., CALCULATORS ARE NOT
                    AVAILABLE TO STUDENTS) =NO CALCULATORS
SPOLFF      WHICH OF THE FOLLOWING BEST DESCRIBES YOUR DEPARTMENT'S POLICY
                    THE USE BY POPULATION A STUDENTS OF 'FOUR FUNCTION'
                    CALCULATORS IN THE MATHEMATICS CLASSROOM? *CALPOL
(+22 BRITISH COLUMBIA CHANGED "POPULATION A" TO "GRADE 8"+)
SPOLPP      WHICH OF THE FOLLOWING BEST DESCRIBES YOUR DEPARTMENT'S POLICY
                    THE USE BY POPULATION A STUDENTS OF PRE-PROGRAMMED
                    MULTIFUNCTION AND//OR PROGRAMMABLE CALCULATORS IN THE
                    CLASSROOM? *CALPOL
(+22 BRITISH COLUMBIA CHANGED "POPULATION A" TO "GRADE 8"+)
SSTREAM     DOES SETTING OR STREAMING TAKE PLACE IN POPULATION A MATHEMATICS
                    IN YOUR SCHOOL? (SETTING MEANS THAT STUDENTS OF SIMILAR
                    MATHEMATICAL ABILITY ARE GROUPED TOGETHER; STREAMING MEANS
                    THAT STUDENTS OF SIMILAR GENERAL ABILITY ARE GROUPED TOGETHER
                    FOR INSTRUCTION).
                    /1 YES
                    /2 NO
(+15 BELGIUM(FL) EXTENDED THE CODING SCHEME TO:
     /1 YES = SETTING + STREAMING
     /2 NO
     /3 YES STREAMING
     /4 YES SETTING+)
(+22 BRITISH COLUMBIA CHANGED "POPULATION A" TO "GRADE 8"+)
(+25 0NTARIO OMITTED THE WORD "STREAMING" AND MADE 3 CHOICES INSTEAD
```

```
    OF 2, BUT RECODED THE QUEST. AT NAT. CENTRE TO IEA FORMAT+)
SBGMATH    WHICH OF THE FOLLOWING BEST DESCRIBES MATHEMATICS TEACHING IN
           YOUR SCHOOL?
           /1 BOYS AND GIRLS TAKE THE SAME CURRICULUM AND ARE TAUGHT
           TOGETHER =SEXES TOGETHER
           /2 BOYS AND GIRLS TAKE THE SAME CURRICULUM AND ARE TAUGHT
           SEPARATELY =SEXES APART
           /3 BOYS AND GIRLS TAKE DIFFERENT CURRICULA =SEXES DIFFER CURR
           /4 QUESTION INAPPROPRIATE,(I.E.,
           =SINGLE SEX
...............................................................................
.                          CLASS VARIABLES
...............................................................................
*STRTYPE  STREAMING DATA FOR THE TARGET CLASS.
           /1 HETEROGENEOUS GROUPING = HETEROGENEOUS
           /2 HOMOGENEOUS GROUPING - LOW =LOW GROUP
           /3 HOMOGENEOUS GROUPING - MIDDLE =MIDDLE GROUP
           /4 HOMOGENEOUS GROUPING - HIGH =HIGH GROUP
9         BEGINNING-OF-YEAR STREAMING DATA
KTYPE     FROM BEGINNING-OF-YEAR RECORDS. *STRTYPE
9         END-OF-YEAR STREAMING DATA
LTYPE     FROM END-OF-YEAR RECORDS.  *STRTYPE
...............................................................................
.     MATHEMATICS IN SCHOOL ATTITUDE ITEMS, USED IN STUDENT PRETEST,
.                   POSTTEST, AND TEACHER QUESTIONNAIRES.
...............................................................................
*IMPORT   /1 VERY IMPORTANT
          /2 IMPORTANT
          /3 UNDECIDED
          /4 NOT IMPORTANT
          /5 NOT AT ALL IMPORTANT =NOTATALL IMPORT
*EASE     /1 VERY EASY
          /2 EASY
            /3 UNDECIDED
            /4 HARD
            /5 VERY HARD
*LIKE       /1 LIKE A LOT
            /2 LIKE
            /3 UNDECIDED
            /4 DISLIKE
            /5 DISLIKE A LOT
*WP       SOLVING WORD PROBLEMS.
*MEM      MEMORIZING RULES AND FORMULAS.
*EST      ESTIMATING ANSWERS TO PROBLEMS.
*CHK      CHECKING AN ANSWER TO A PROBLEM BY GOING BACK OVER IT.
*CHRT     USING CHARTS AND GRAPHS.
*EQUA     SOLVING EQUATIONS.
*INEQ     SOLVING INEQUALITIES.
*GEOM     LEARNING ABOUT GEOMETRIC FIGURES.
*RAT      LEARNING ABOUT RATIO AND PROPORTION.
*DEC      WORKING PROBLEMS THAT INVOLVE DECIMAL FRACTIONS.
*SETS     WORKING WITH SETS.
*MEAS     LEARNING ABOUT UNITS OF MEASURE (E.G., DISTANCE, AREA, VOLUME)
*DRAW     DRAWING GEOMETRIC FIGURES.
*STAT     GETTING INFORMATION FROM STATISTICAL TABLES.
*FIG      COMPARING GEOMETRIC FIGURES THAT ARE SIMILAR.
...............................................................................
. MATHEMATICS AS A PROCESS ATTITUDE ITEMS AND ATTITUDE AGREEMENT OPTION
.            USED IN STUDENT POSTTEST AND TEACHER QUESTIONNIARES
...............................................................................
*AGREE     /1 STRONGLY DISAGREE =STRONG DISAGREE
```

```
                /2 DISAGREE
                /3 UNDECIDED
                /4 AGREE
                /5 STRONGLY AGREE
*NONEW     THERE HAVE NOT BEEN ANY NEW DISCOVERIES IN MATHEMATICS FOR A LONG
                TIME.
*MTHLOG    MATHEMATICS HELPS ONE TO THINK LOGICALLY.
*CHANGE    MATHEMATICS WILL CHANGE RAPIDLY IN THE NEAR FUTURE.
*ALWRUL    THERE IS ALWAYS A RULE TO FOLLOW IN SOLVING A MATHEMATICS
                PROBLEM.
*TAESLV    TRIAL AND ERROR CAN OFTEN BE USED TO SOLVE A MATHEMATICS PROBLEM
*MEMRZG    LEARNING MATHEMATICS INVOLVES MOSTLY MEMORIZING.
*WORULE    IN MATHEMATICS, PROBLEMS CAN BE SOLVED WITHOUT USING RULES.
*CREATE    MATHEMATICS IS A GOOD FIELD FOR CREATIVE PEOPLE.
*RULES     MATHEMATICS HELPS ONE TO THINK ACCORDING TO STRICT RULES.
*LTORIG    THERE IS LITTLE PLACE FOR ORIGINALITY IN SOLVING MATHEMATICS
                PROBLEMS.
*MTHRUL    MATHEMATICS IS A SET OF RULES.
*ESTIMP    ESTIMATING IS AN IMPORTANT MATHEMATICS SKILL.
*MNYWYS    THERE ARE MANY DIFFERENT WAYS TO SOLVE MOST MATHEMATICS PROBLEM
*NEWDSC    NEW DISCOVERIES IN MATHEMATICS ARE CONSTANTLY BEING MADE.
*DIFWAY    A MATHEMATICS PROBLEM CAN ALWAYS BE SOLVED IN DIFFERENT WAYS.
.........................................................................
.            COMMON STEMS AND RESPONSE CODINGS FOR TEACHER
.             OPPORTUNITY TO LEARN QUESTIONS ASKED OF THE
.                       COGNITIVE TEST ITEMS
.........................................................................
9          TEACHER OPPORTUNITY TO LEARN INSTRUMENTATION
TITEME     WHAT PERCENTAGE OF THE STUDENTS FROM THE TARGET CLASS DO YOU
                ESTIMATE WILL GET THE ITEM CORRECT WITHOUT GUESSING?
                /1 VIRTUALLY NONE
                /2 6-40 PERCENT =6 TO 40 PC
                /3 41-60 PERCENT = 41 TO 60 PC
                /4 61-94 PERCENT = 61 TO 94 PC
                /5 VIRTUALLY ALL
TITEMT     DURING THIS SCHOOL YEAR DID YOU TEACH OR REVIEW THE MATHEMATICS
                NEEDED TO ANSWER THE ITEM CORRECTLY?
                /1 YES
                /2 NO
TITEMW     IF IN THIS SCHOOL YEAR YOU DID NOT TEACH OR REVIEW THE
                MATHEMATICS NEEDED TO ANSWER THIS ITEM CORRECTLY, WAS
                IT MAINLY BECAUSE...
                /1 IT HAD BEEN TAUGHT PRIOR TO THIS SCHOOL YEAR =TAUGHT PRIOR
                /2 IT WILL BE TAUGHT LATER (THIS YEAR OR LATER) =TEACH LATER
                /3 IT IS NOT IN THE SCHOOL CURRICULUM AT ALL = NOT IN CURR
                /4 FOR OTHER REASONS = OTHER REASONS
.........................................................................
.                        TEACHER QUESTIONNAIRE
.........................................................................
9          TEACHER QUESTIONNAIRE
7          SECTION A (*BACKGROUND*)
TSEX       YOUR SEX
                /1 FEMALE
                /2 MALE
TAGE       YOUR AGE (IN YEARS)
TEXPTCH    HOW MANY YEARS' EXPERIENCE HAVE YOU HAD AS A TEACHER, (INCLUDING
                THE CURRENT YEAR)? (EXPRESS PART-TIME EXPERIENCE AS FULL-TIME
                EQUIVALENT AND ROUND TO THE NEAREST YEAR)
TEXPMTH    HOW MANY OF THOSE YEARS HAVE BEEN SPENT TEACHING MATHEMATICS TO
                POPULATION A STUDENTS? (ROUND TO THE NEAREST YEAR)
(+22 BRITISH COLUMBIA CHANGED "POPULATION A" TO "GRADE 8"+)
```

```
TEDMATH    HOW MANY SEMESTERS IN MATHEMATICS WERE INCLUDED IN YOUR
              POST-SECONDARY EDUCATION?
(-15 BELGIUM(FL) DELETED THIS QUESTION WITH THE COMMENT: NOT
APPROPRIATE FOR THE NATIONAL SITUATION-)
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "HOW MANY MATHEMATICS
COURSES WERE INCLUDED IN YOUR POST-SECONDARY EDUCATION?"+)
(+25 ONTARIO CHANGED THE QUESTION TO A MULTICHOICE FORMAT, BUT
   RECODED TO IEA FORMAT AT NAT. CENTRE+)
TEDMED     HOW MANY SEMESTERS IN MATHEMATICS METHODS AND PEDAGOGY WERE
              INCLUDED IN YOUR POST-SECONDARY EDUCATION?
(-15 BELGIUM(FL) DELETED THIS QUESTION WITH THE COMMENT: NOT
APPROPRIATE FOR THE NATIONAL SITUATION-)
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "HOW MANY COURSES IN
MATHEMATICS PEDAGOGY WERE INCLUDED IN YOUR POST-SECONDARY EDUCATION?"+)
(+25 ONTARIO CHANGED THE QUESTION TO A MULTICHOICE FORMAT, BUT
   RECODED TO IEA FORMAT AT NAT. CENTRE+)
TEDGED     HOW MANY SEMESTERS IN GENERAL METHODS AND PEDAGOGY WERE INCLUDED
              IN YOUR POST-SECONDARY EDUCATION? (DO NOT INCLUDE THOSE
              IDENTIFIED IN QUESTION (PREVIOUS QUESTION))
(-15 BELGIUM(FL) DELETED THIS QUESTION WITH THE COMMENT: NOT
APPROPRIATE FOR THE NATIONAL SITUATION-)
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "HOW MANY GENERAL PEDAGOGY
COURSES WERE INCLUDED IN YOUR POST-SECONDARY EDUCATION?"+)
(+25 ONTARIO CHANGED THE QUESTION TO A MULTICHOICE FORMAT, BUT
   RECODED TO IEA FORMAT AT NAT. CENTRE+)
THRSTCH    WHAT IS YOUR TOTAL NUMBER OF TEACHING PERIODS (IE, CLASS CONTACT
              PERIODS) PER WEEK?
THRSMTH    HOW MANY OF THESE PERIODS PER WEEK DO YOU SPEND TEACHING
              MATHEMATICS?
2          IN ADDITION TO TEACHING MATHEMATICS, DO YOU HAVE ANY OF
              THE FOLLOWING DUTIES?
*YESNO     /1 YES
           /2 NO
TSCITCH    TEACHER OF SCIENCE. *YESNO
TOTHTCH    TEACHER IN OTHER AREAS. *YESNO
THOD       HEAD OF THE MATHEMATICS DEPARTMENT. *YESNO
(-40 FRANCE DELETED THIS VARIABLE-)
TADGEN     SCHOOL ADMINISTRATOR - GENERAL. *YESNO
(+15 BELGIUM(FL) CHANGED DESCRIPTION TO "CLASS ADMINISTRATOR"+)
(-40 FRANCE DELETED THIS VARIABLE-)
TADSUB     SCHOOL ADMINISTRATOR - SUBJECT AREA. *YESNO
(+15 BELGIUM(FL) CHANGED DESCRIPTION TO "OTHER DUTIES"+)
(-40 FRANCE DELETED THIS VARIABLE-)
2          ENTER THE NUMBER OF CLASSES AND THE NUMBER OF HOURS YOU TEACH
              (ANY SUBJECT) PER WEEK AT EACH OF THE FOLLOWING LEVELS.
*CLASSES   CLASSES AT
*HOURS     HOURS PER WEEK AT
TPOPAC     *CLASSES POPULATION A
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "ENTER THE NUMBER OF CLASSES
AND THE NUMBER OF HOURS YOU TEACH (ANY SUBJECT) PER WEEK AT EACH OF
THE FOLLOWING LEVELS:
    1  GRADE 8             _____CLASSES
                           _____HOURS PER WEEK
    2  LOWER THAN GRADE 8  _____CLASSES
                           _____HOURS PER WEEK
    3  HIGHER THAN GRADE 8 _____CLASSES
                           _____HOURS PERWEEK+)
TPOPAH     *HOURS POPULATION A
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "ENTER THE NUMBER OF CLASSES
AND THE NUMBER OF HOURS YOU TEACH (ANY SUBJECT) PER WEEK AT EACH OF
THE FOLLOWING LEVELS:
```

```
        1  GRADE 8                   ____CLASSES
                                     ____HOURS PER WEEK
        2  LOWER THAN GRADE 8        ____CLASSES
                                     ____HOURS PER WEEK
        3  HIGHER THAN GRADE 8       ____CLASSES
                                     ____HOURS PERWEEK+)
TLOWAC    *CLASSES LOWER THAN POPULATON A
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "ENTER THE NUMBER OF CLASSES
AND THE NUMBER OF HOURS YOU TEACH (ANY SUBJECT) PER WEEK AT EACH OF
THE FOLLOWING LEVELS:
        1  GRADE 8                   ____CLASSES
                                     ____HOURS PER WEEK
        2  LOWER THAN GRADE 8        ____CLASSES
                                     ____HOURS PER WEEK
        3  HIGHER THAN GRADE 8       ____CLASSES
                                     ____HOURS PERWEEK+)
TLOWAH    *HOURS LOWER THAN POPULATON A
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "ENTER THE NUMBER OF CLASSES
AND THE NUMBER OF HOURS YOU TEACH (ANY SUBJECT) PER WEEK AT EACH OF
THE FOLLOWING LEVELS:
        1  GRADE 8                   ____CLASSES
                                     ____HOURS PER WEEK
        2  LOWER THAN GRADE 8        ____CLASSES
                                     ____HOURS PER WEEK
        3  HIGHER THAN GRADE 8       ____CLASSES
                                     ____HOURS PERWEEK+)
THIGHAC   *CLASSES HIGHER THAN POPULATION A
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "ENTER THE NUMBER OF CLASSES
AND THE NUMBER OF HOURS YOU TEACH (ANY SUBJECT) PER WEEK AT EACH OF
THE FOLLOWING LEVELS:
        1  GRADE 8                   ____CLASSES
                                     ____HOURS PER WEEK
        2  LOWER THAN GRADE 8        ____CLASSES
                                     ____HOURS PER WEEK
        3  HIGHER THAN GRADE 8       ____CLASSES
                                     ____HOURS PERWEEK+)
(-54 JAPAN DELETED THIS VARIABLE-)
THIGHAH   *HOURS HIGHER THAN POPULATION A
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "ENTER THE NUMBER OF CLASSES
AND THE NUMBER OF HOURS YOU TEACH (ANY SUBJECT) PER WEEK AT EACH OF
THE FOLLOWING LEVELS:
        1  GRADE 8                   ____CLASSES
                                     ____HOURS PER WEEK
        2  LOWER THAN GRADE 8        ____CLASSES
                                     ____HOURS PER WEEK
        3  HIGHER THAN GRADE 8       ____CLASSES
                                     ____HOURS PERWEEK+)
(-54 JAPAN DELETED THIS VARIABLE-)
TSBJCTS   HOW MANY SUBJECTS DO YOU TEACH TO STUDENTS IN THE TARGET CLASS
          /1 ONLY MATHEMATICS =ONLY MATH
          /2 MATHEMATICS AND AT LEAST ONE (BUT NOT ALL) OTHER SUBJECTS
             =MATH AND SOME
          /3 ALL SUBJECTS
(+22 BRITISH COLUMBIA RECODED AT INT. CENTRE:
     /1 = 3
     /3 = 1+)
(+54 JAPAN RECODED AT INT. CENTRE:
     /1 = 3
     /3 = 1+)
7         INFORMATION ON THE TARGET CLASS
TNTCHS    HOW MANY TEACHERS, APART FROM YOURSELF AND THE OCCASIONAL
```

```
                 SUBSTITUTE, HAVE TAUGHT MATHEMATICS TO THE TARGET CLASS THIS
                 SCHOOL YEAR?
(+25 ONTARIO USED "SUPPLY TEACHER" INSTEAD OF "SUBSTITUTE", BUT INT.
  CENTRE CONSIDERS NO CHANGE IN MEANING+)
TNSTUDS   HOW MANY STUDENTS ARE CURRENTLY ENROLLED IN THE TARGET CLASS?
TPPWEEK   HOW MANY PERIODS OF MATHEMATICS INSTRUCTION DOES THIS TARGET
                 CLASS RECEIVE EACH WEEK?
TLENPER   WHAT IS THE AVERAGE LENGTH OF EACH CLASS PERIOD (IN MINUTES)?
THPYEAR   HOW MANY HOURS (APPROXIMATELY) OF MATHEMATICS INSTRUCTION WILL
                 THE TARGET CLASS HAVE RECEIVED BY THE END OF THE SCHOOL YEAR
TCFMATH   HOW DOES THE TARGET CLASS COMPARE WITH OTHER POPULATION A
                 MATHEMATICS CLASSES IN YOUR SCHOOL IN TERMS OF MATHEMATICAL
                 ABILITY?
                 /1 THERE ARE NO OTHER POPULATION A CLASSES IN THE SCHOOL =NO
                 OTHER CLASSES
                 /2 HIGHER
                 /3 ABOUT THE SAME
                 /4 LOWER
(+22 BRITISH COLUMBIA MODIFIED THIS QUESTION, INT. ALT. CODE 1 NOT
 ASKED: RECODED AT INT. CENTRE:
      /1 = 4
      /2 = 3
      /3 = 2+)
TRANGE    IN YOUR ESTIMATION, HOW WIDE IS THE RANGE OF MATHEMATICS
                 ABILITIES IN THE TARGET CLASS?
                 /1 VERY WIDE
                 /2 FAIRLY WIDE
                 /3 FAIRLY NARROW
                 /4 VERY NARROW
TMASTRY   WHAT PERCENTAGE OF THE TARGET CLASS DO YOU CONSIDER ENTERED THE
                 CLASS WITH A SUFFICIENT DEGREE OF MASTERY OF PREVIOUS
                 CURRICULA?
TMTHSUB   HOW WOULD YOU CHARACTERIZE THE MAIN MATHEMATICS SUBJECT MATTER
                 TAUGHT IN THE TARGET CLASS?
                 /1 REMEDIAL
                 /2 TYPICAL
                 /3 ENRICHED OR ACCELERATED =ENRCHD ACCLRTD
2         ESTIMATE THE NUMBER OF STUDENTS IN THE TARGET CLASS WHO FIT IN
                 EACH OF THE FOLLOWING CATEGORIES IN TERMS OF MATHEMATICAL
                 ABILITY. (THE SUM OF YOUR ANSWERS SHOULD EQUAL THE TOTAL
                 NUMBER OF STUDENTS IN THE CLASS)
*POPANAT  OF THE POPULATION A STUDENTS NATIONALLY
(+22 BRITISH COLUMBIA CHANGED "THE POPULATION A STUDENTS NATIONALLY" TO
"GRADE 8 STUDENTS IN THE PROVINCE"+)
TTOP      TOP THIRD *POPANAT
TMIDDLE   MIDDLE THIRD *POPANAT
TBOTTOM   BOTTOM THIRD *POPANAT
TNOJDG    UNABLE TO JUDGE
5         THINK ABOUT WHAT YOU DID WITH THE TARGET CLASS LAST WEEK AND
                 DURING WHATEVER YOU CONSIDER A TYPICAL WEEK.
*LASTMIN  (LAST WEEK MINUTES)
*TYPIMIN  (TYPICAL WEEK MINUTES)
4         IN BOTH CASES ESTIMATE THE NUMBER OF MINUTES SPENT BY YOU ON EACH
                 OF THE FOLLOWING...
2         PREPARATION AND PLANNING FOR MATHEMATICS (OUTSIDE CLASS CONTACT
                 TIME AND NOT INCLUDING TIME SPENT GRADING PAPERS AND ROUTINE
                 MARKING OF HOMEWORK).
TPREPL    *LASTMIN
TPREPT    *TYPIMIN
2         GRADING STUDENT PAPERS, QUIZZES AND TESTS OUTSIDE CLASS.
TGRADEL   *LASTMIN
```

```
TGRADET    *TYPIMIN
2          EXPLAINING MATHEMATICS CONTENT NEW TO THE CLASS (TO MORE THAN
               STUDENT AT A TIME).
TEXPLNL    *LASTMIN
TEXPLNT    *TYPIMIN
2          REVIEWING MATHEMATICS CONTENT NOT NEW TO THE CLASS (WITH MORE
               THAN ONE STUDENT AT A TIME).
TREVUL     *LASTMIN
TREVUT     *TYPIMIN
2          ROUTINE ADMINISTRATION (E.G., MARKING ROLL, MAKING SCHOOL
               ANNOUNCEMENTS, SETTING UP EQUIPMENT, ETC.).
TADMINL    *LASTMIN
TADMINT    *TYPIMIN
2          ESTABLISHING AND MAINTAINING CLASS ORDER AND DISCIPLINING
               STUDENTS DURING CLASS TIME.
TORDERL    *LASTMIN
TORDERT    *TYPIMIN
4          NOW ESTIMATE THE AVERAGE TIME PER STUDENT SPENT
               ON EACH OF THE FOLLOWING...
2          TAKING TESTS AND QUIZZES
TTESTL     *LASTMIN
TTESTT     *TYPIMIN
2          DOING SEAT WORK OR BLACKBOARD WORK (STUDENTS PREPARING INDIVIDUAL
               WRITTEN ANSWERS TO ASSIGNED EXERCISES OR PROBLEMS, BUT NOT
               COUNTING TESTS AND QUIZZES)
TSEATL     *LASTMIN
TSEATT     *TYPIMIN
2          LISTENING AS A WHOLE CLASS TO YOU GIVE LECTURES OR EXPLANATION
TLISTL     *LASTMIN
TLISTT     *TYPIMIN
2          WORKING IN SMALL GROUPS
TGROUPL    *LASTMIN
TGROUPT    *TYPIMIN
5
TQUEST     IN A TYPICAL WEEK, DURING AN AVERAGE COMPLETE PERIOD IN THE
               TARGET CLASS, HOW MANY DIFFERENT STUDENTS ARE CALLED UPON TO
               ANSWER ORAL QUESTIONS?
               /1 UP TO 1//4 OF THE CLASS =UP TO 1 4TH
               /2 MORE THAN 1//4, UP TO 1//2 OF THE CLASS =1 TO 2 4THS
               /3 MORE THAN 1//2, UP TO 3//4 OF THE CLASS =2 TO 3
               4THS
               /4 MORE THAN 3//4 OF THE CLASS =MORE THAN 3 4THS
(+15 BELGIUM(FL) POSTCODED THE ADDITIONAL ALTERNATIVE:
     /5  SUCH A SITUATION NEVER OCCURS+)
TDIFASG    HOW OFTEN ARE SOME STUDENTS IN THE TARGET CLASS ASKED TO DO
               EXERCISES OR PROBLEM ASSIGNMENTS WHICH ARE DIFFERENT FROM
               THOSE GIVEN OTHER STUDENTS IN THE CLASS?
               /1 FREQUENTLY
               /2 OCCASIONALLY
               /3 RARELY OR NEVER
(+22 BRITISH COLUMBIA RECODED AT INT. CENTRE:
     /1 = 3
     /3 = 1+)
2          HOW MANY HOURS PER WEEK DO YOU THINK HAVE BEEN NEEDED BY A
               TYPICAL STUDENT IN THE TARGET CLASS TO COMPLETE THE ASSIGNED
               HOMEWORK
               (I.E., WORK TO BE COMPLETED OUTSIDE CLASS CONTACT HOURS)?
THWRKL     LAST WEEK NUMBER OF HOURS
THWRKT     TYPICAL WEEK NUMBER OF HOURS
2          IN YOUR TARGET CLASS, ABOUT HOW OFTEN ARE CALCULATORS USED IN
               MATHEMATICS?
```

```
*FRECAL    /1 DURING TWO PERIODS OR MORE PER WEEK =TWICE A WEEK
            /2 DURING ONE PERIOD PER WEEK =ONCE A WEEK
            /3 OCCASIONALLY (NOT EVERY WEEK) =OCCASIONALLY
            /4 NEVER
            /5 CALCULATORS ARE NOT ALLOWED =NOT ALLOWED
TFFCALC    FOUR FUNCTION *FRECAL
TPPCALC    PRE-PROGRAMMED (SCIENTIFIC) AND//OR PROGRAMMABLE *FRECAL
2          WHICH OF THESE DO YOU ENCOURAGE
            YOUR TARGET CLASS STUDENTS TO DO?
*TCALUSE   /0 NO USE
            /1 FOUR FUNCTION CALCULATOR =FF FOUR FUNCTION
            /2 PREPROGRAMMED (SCIENTIFIC) AND//OR PROGRAMMABLE CALCULATORS
            =PPSCI PROGRAMMED
            /3 COMPUTER
            /4 FOUR FUNCTION AND PREPROGRAMMED ETC. CALCULATOR =FF PPSCI
            /5 FOUR FUNCTION CALCULATOR AND COMPUTER =FF AND COMPUTER
            /6 PREPROGRAMMED ETC. CALCULATOR AND COMPUTER =PPSCI COMPUTER
            /7 FOUR FUNCTION AND PREPROGRAMMED ETC. CALCULATOR AND
            COMPUTER =FF PPSCI COMP
TCCCHK     TO CHECK ANSWERS TO EXERCISES *TCALUSE
TCCHWRK    TO DO HOMEWORK *TCALUSE
TCCSLV     AS AN AID TO SOLVE PROBLEMS *TCALUSE
TCCTEST    TO TAKE TESTS *TCALUSE
TCCPROJ    AS AN AID TO DO PROJECTS *TCALUSE
TCCPLSR    FOR RECREATION *TCALUSE
5          BY THE END OF THE SCHOOL YEAR, INDICATE THE APPROXIMATE NUMBER
            TEACHING PERIODS YOU EXPECT TO HAVE SPENT ON THE FOLLOWING
            TOPICS IN THE TARGET CLASS. PLEASE INDICATE WHETHER THIS TIME
            IS SPENT CONTINUOUSLY OR WHETHER YOU LEAVE THE TOPIC AND
            RETURN TO IT (E.G., REVIEWING IT)
*PERIODS   APPROXIMATE NUMBER OF TEACHING PERIODS
*TCHREVU   DO YOU LEAVE IT AND RETURN (REVIEW)
            /1 YES
            /2 NO
2          COMMON FRACTIONS.
TFRACP     *PERIODS
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
TFRACR     *TCHREVU
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
2          DECIMAL FRACTIONS.
TDECIMP    *PERIODS
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
2          DECIMAL FRACTIONS.
TDECIMR    *TCHREVU
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
2          RATIO AND PROPORTION.
TRATIOP    *PERIODS
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
TRATIOR    *TCHREVU
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
2          PERCENTAGE.
TPERCP     *PERIODS
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
TPERCR     *TCHREVU
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
2          MEASUREMENT.
TMESURP    *PERIODS
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
TMESURR    *TCHREVU
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
2          GEOMETRY.
```

```
TGEOMP    *PERIODS
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
TGEOMR    *TCHREVU
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
2         FORMULAS AND EQUATIONS.
TFORMLP   *PERIODS
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
TFORMLR   *TCHREVU
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
2         INTEGERS.
TINTEGP   *PERIODS
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
TINTEGR   *TCHREVU
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
2         PROBABILITY AND STATISTICS.
TPROBP    *PERIODS
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
TPROBR    *TCHREVU
(+15 BELGIUM(FL) ADDED CODE 3 = "REVIEWED WITHOUT LEAVING TOPIC AS SUCH"+)
5         INDICATE HOW OFTEN YOU USE THE FOLLOWING IN YOUR INSTRUCTION TO
             YOUR TARGET CLASS?
*RARITY   /1 RARELY OR NEVER
             /2 SOMETIMES
             /3 OFTEN
TTEXTBK   PUBLISHED TEXTBOOKS (CONTAINING BOTH EXPLANATIONS AND EXERCISES)
             *RARITY
TWORKBK   PUBLISHED WORKBOOKS OR PUBLISHED PROBLEM SETS (CONTAINING
             EXERCISES ONLY). *RARITY
TINDMAT   INDIVIDUALIZED MATERIALS (E.G., PROGRAMMED INSTRUCTION). *RARITY
TVISMAT   COMMERCIALLY PRODUCED VISUAL MATERIALS. *RARITY
TPUBTST   COMMERCIALLY PUBLISHED TESTS. *RARITY
TOWNMAT   TEACHING MATERIALS (INCLUDING EXERCISES) YOU HAVE WRITTEN
             YOURSELF. *RARITY
TOWNTST   TESTS YOU HAVE WRITTEN YOURSELF. *RARITY
5
TCOMTXT   SELECT FROM THE FOLLOWING LIST THE TEXTBOOK OR COMMERCIALLY
             PREPARED WORKBOOK YOU MOST COMMONLY USE WITH
             THE TARGET CLASS (*NATIONAL CENTRE
             TO PROVIDE A NATIONAL LIST FOR SELECTION*)
(-15 BELGIUM(FL) DELETED THIS VARIABLE WITH THE COMMENT THAT THE
 MINISTRY OF EDUCATION PUT ITS VETO ON THE PUBLISHING OF THESE DATA-)
7         SECTION B - ATTITUDES
5         HERE ARE SOME TEACHING ACTIVITIES.  FOR EACH, PLEASE TELL
             HOW IMPORTANT YOU FEEL IT TO BE, HOW EASY YOU FIND IT TO
             TEACH THE ACTIVITY, AND WHETHER YOU LIKE TEACHING THE
             ACTIVITY.  IN EACH CASE, ANSWER WITH RESPECT TO THE TARGET
             CLASS YOU ARE PRESENTLY TEACHING.
             HOW DO YOU FEEL ABOUT TEACHING EACH OF THESE MATHEMATICAL
             ACTIVITIES? (*MATHEMATICS IN SCHOOL SCALE*)
2         *CHK
TCHKI     *IMPORT
TCHKE     *EASE
TCHKL     *LIKE
2         *MEM
TMEMI     *IMPORT
TMEME     *EASE
TMEML     *LIKE
2         *WP
TWPI      *IMPORT
TWPE      *EASE
TWPL      *LIKE
```

```
2          *EST
TESTI      *IMPORT
TESTE      *EASE
TESTL      *LIKE
5          EXPRESS, ON A FIVE POINT SCALE, THE EXTENT OF AGREEMENT BETWEEN
             THE FEELING EXPRESSED IN EACH STATEMENT AND YOUR PERSONAL
             FEELINGS. CIRCLE THE CHOICE WHICH BEST DESCRIBES YOUR
             FEELINGS. (*MATHEMATICS AS A PROCESS SCALE*)
TCHANGE    *CHANGE *AGREE
TCREATE    *CREATE *AGREE
TLTORIG    *LTORIG *AGREE
TNEWDSC    *NEWDSC *AGREE
TRULES     *RULES *AGREE
TESTIMP    *ESTIMP *AGREE
TMNYWYS    *MNYWYS *AGREE
TMEMRZG    *MEMRZG *AGREE
TWORULE    *WORULE *AGREE
TTAESLV    *TAESLV *AGREE
TALWRUL    *ALWRUL *AGREE
TNONEW     *NONEW *AGREE
TMTHRUL    *MTHRUL *AGREE
TDIFWAY    *DIFWAY *AGREE
TMTHLOG    *MTHLOG *AGREE
...............................................................................
.              THE FOLLOWING STEMS AND CODINGS APPLY ACROSS THE CLASSROOM       .
.                        PROCESS TOPIC SPECIFIC QUESTIONNAIRES                   .
...............................................................................
*SOURCE    /1 PRIMARY SOURCE, USED FREQUENTLY=PRIMARY SOURCE
             /2 SECONDARY SOURCE, USED OCCASIONALLY=SECONDARY SOURCE
             /3 NOT USED OR RARELY USED
*TAUGHT    /1 TAUGHT AS NEW CONTENT=TAUGHT NEW
             /2 REVIEWED AND THEN EXTENDED=REVIEW EXTEND
             /3 REVIEWED ONLY
             /4 ASSUMED AS PREREQUISITE KNOWLEDGE AND NEITHER TAUGHT NOR
             REVIEWED =ASSUMED PREREQ
             /5 NOT TAUGHT AND NOT ASSUMED AS PREREQUISITE KNOWLEDGE
             =NEITHER
*CIRCINT   CIRCLE THE APPROPRIATE RESPONSE CODE TO SHOW WHETHER FOR STUDENTS
             IN THE TARGET CLASS THE INTERPRETATION WAS...
*CIRCPRO   CIRCLE THE APPROPRIATE RESPONSE CODE TO SHOW WHETHER FOR STUDENTS
             IN THE TARGET CLASS THE PROCEDURE WAS...
*CIRCTEC   CIRCLE THE APPROPRIATE RESPONSE CODE TO SHOW WHETHER FOR STUDENTS
             IN THE TARGET CLASS THE TECHNIQUE WAS...
*CIRCMET   CIRCLE THE APPROPRIATE RESPONSE CODE TO SHOW WHETHER FOR STUDENTS
             IN THE TARGET CLASS THE METHOD WAS...
*CIRCAPP   CIRCLE THE APPROPRIATE RESPONSE CODE TO SHOW WHETHER FOR STUDENTS
             IN THE TARGET CLASS THIS TYPE OF APPLICATION//PROBLEM WAS...
*EMPHEXP   /1 EMPHASIZED (USED AS A PRIMARY EXPLANATION, REFERRED TO
             EXTENSIVELY OR FREQUENTLY) = EMPHASIZED
             /2 USED, BUT NOT EMPHASIZED=USED NOT EMPHSZD
             /3 NOT USED
*EMPHPRO   /1 EMPHASIZED (USED AS A PRIMARY PROCEDURE, REFERRED TO
             EXTENSIVELY OR FREQUENTLY) = EMPHASIZED
             /2 USED, BUT NOT EMPHASIZED=USED NOT EMPHSZD
             /3 NOT USED
*EMPHTEC   /1 EMPHASIZED (USED AS A PRIMARY TECHNIQUE, REFERRED TO
             EXTENSIVELY OR FREQUENTLY) = EMPHASIZED
             /2 USED, BUT NOT EMPHASIZED=USED NOT EMPHSZD
             /3 NOT USED
*EMPHMET   /1 EMPHASIZED (USED AS A PRIMARY METHOD, REFERRED TO EXTENSIVELY
             OR FREQUENTLY) = EMPHASIZED
```

```
              /2 USED, BUT NOT EMPHASIZED=USED NOT EMPHSZD
              /3 NOT USED
*EMPHAPP  /1 EMPHASIZED (USED AS A PRIMARY TYPE OF APPLICATION,
              USED EXTENSIVELY OR FREQUENTLY) = EMPHASIZED
              /2 USED, BUT NOT EMPHASIZED=USED NOT EMPHSZD
              /3 NOT USED
*EMPHINT  /1 EMPHASIZED (USED AS A PRIMARY INTERPRETATION,
              REFERRED TO EXTENSIVELY OR FREQUENTLY) = EMPHASIZED
              /2 USED, BUT NOT EMPHASIZED=USED NOT EMPHSZD
              /3 NOT USED
*EMPHMEX  /1 USED AS A PRIMARY METHOD OF EXPLANATION =PRIMARY METHOD
              /2 USED, BUT NOT AS A PRIMARY MEANS OF EXPLANATION =USED NOT
              PRIMARY
              /3 NOT USED
*TEXTINT  THIS INTERPRETATION WAS...
              /1 IN STUDENTS' TEXT=IN STDNTS TEXT
              /2 NOT IN STUDENTS' TEXT=NOT IN TEXT
*TEXTMET  THIS METHOD WAS...
              /1 IN STUDENTS' TEXT=IN STDNTS TEXT
              /2 NOT IN STUDENTS' TEXT=NOT IN TEXT
*TEXTPRO  THIS PROCEDURE WAS...
              /1 IN STUDENTS' TEXT=IN STDNTS TEXT
              /2 NOT IN STUDENTS' TEXT=NOT IN TEXT
*REASINT  FOR THOSE INTERPRETATIONS EMPHASIZED, THE PRIMARY REASON(S) WAS
              (WERE) ... (*OR*) ...  FOR THOSE INTERPRETATIONS NOT USED, THE
              PRIMARY REASON(S) WAS (WERE)...
              (*NOTE THAT THE FOLLOWING VARIABLES COMBINE THE CODING FOR THE
              REASONS GIVEN FOR AND AGAINST*)
*REASPRO  FOR THOSE PROCEDURES EMPHASIZED, THE PRIMARY REASON(S) WAS
              (WERE) ... (*OR*) ...  FOR THOSE PROCEDURES NOT USED, THE
              PRIMARY REASON(S) WAS (WERE)...
              (*NOTE THAT THE FOLLOWING VARIABLES COMBINE THE CODING FOR THE
              REASONS GIVEN FOR AND AGAINST*)
*REASMET  FOR THOSE METHODS USED AS PRIMARY EXPLANATIONS, THE MAIN REASON(S)
              WAS (WERE) ... (*OR*) ...  FOR THOSE METHODS NOT USED, THE
              PRIMARY REASON(S) WAS (WERE)...
              (*NOTE THAT THE FOLLOWING VARIABLES COMBINE THE CODING FOR THE
              REASONS GIVEN FOR AND AGAINST*)
*K        /1 WELL KNOWN TO ME
              /2 NEVER CONSIDERED USING IT=NEVER CONSIDERED
*S        /1 EMPHASIZED IN SYLLABUS OR EXTERNAL EXAM=SYLLABUS OR EXAM
              /2 NOT IN SYLLABUS OR EXTERNAL EXAM=NOT SYLLBS EXAM
*U        /1 EASY FOR STUDENTS TO UNDERSTAND=EASY UNDERSTAND
              /2 DIFFICULT FOR STUDENTS TO UNDERSTAND=DIFFICULT
*L        /1 ENJOYED BY STUDENTS=STUDENTS LIKE
              /2 DISLIKED BY STUDENTS=STUDENTS DISLIKE
*R        /1 RELATED TO MATH IN PRIOR YEARS=RELATED PRIOR
              /2 DOES NOT RELATE TO PREVIOUS STUDY OF MATH=DOES NOT RELATE
*F        /1 USEFUL FOR MATH IN SUBSEQUENT CLASSES=USEFUL FUTURE
              /2 NOT USEFUL FOR FUTURE STUDY=NO FUTURE USE
*H        /1 EASY TO TEACH
              /2 HARD TO TEACH
*X        /1 EMPHASIZED IN STUDENTS' TEXT=EMPHASIZED TEXT
              /2 NOT EMPHASIZED IN STUDENTS' TEXT=NOT EMPHASIZED
*ACTTIME  INDICATE THE AMOUNT OF TIME SPENT ON EACH OF THE FOLLOWING
              ACTIVITIES (THAT IS, DEMONSTRATIONS, EXPLANATIONS, STUDENTS
              DOING COMPUTATIONAL EXERCISES, USING MANIPULATIVES, ETC.) WITH
              YOUR TARGET CLASS. CIRCLE THE ESTIMATED NUMBER OF CLASS
              PERIODS. IF MORE THAT 10 PERIODS WERE SPENT ON ANY TOPIC,
              SPECIFY THE NUMBER OF PERIODS ON THE BLANK. NOTE. THE SUM OF
              PERIODS GIVEN FOR (*THESE ITEMS*) SHOULD NOT EXCEED THE NUMBER
```

```
                  GIVEN FOR (*THE PREVIOUS ITEM*).
*CONCEPT   WHERE THE PRIMARY PURPOSE WAS CONCEPTUAL UNDERSTANDING OR
                  COMPUTATIONAL SKILL, BUT NOT PROBLEM SOLVING.
*AGGDIS    /1 STRONGLY AGREE
                  /2 AGREE
                  /3 UNDECIDED
                  /4 DISAGREE
                  /5 STRONGLY DISAGREE=STRNGLY DISAGREE
*CIRCSRC   CIRCLE THE APPROPRIATE RESPONSE CODE TO SHOW WHETHER FOR THE
                  TARGET CLASS EACH SOURCE WAS...
*USEDSRC   /1 USED EXTENSIVELY OR FREQUENTLY=USED A LOT
                  /2 USED OCCASIONALLY=OCCASIONAL USE
                  /3 NOT USED
*USAGE     /1 USED EXTENSIVELY OR FREQUENTLY=USED A LOT
                  /2 USED OCCASIONALLY=OCCASIONAL USE
                  /3 NOT USED
```

...................................................................
.      TEACHER CLASSROOM PROCESSES TOPIC SPECIFIC QUESTIONNAIRE      .
.                    FRACTIONS           .
...................................................................

```
9          TEACHER CLASSROOM PROCESSES QUESTIONNAIRE - FRACTIONS. ...
                  CHECK HERE IF NEITHER COMMON FRACTIONS NOR DECIMAL FRACTIONS IS
                  INCLUDED IN YOUR PROGRAM. DISREGARD THE REMAINDER OF THIS
                  QUESTIONNAIRE AND RETURN IT.
7          CIRCLE THE RESPONSE WHICH BEST DESCRIBES THE USE YOU MADE OF EACH
                  OF THE FOLLOWING MATERIALS IN YOUR INSTRUCTION ON COMMON
                  AND//OR DECIMAL FRACTIONS.
FSTEXT     STUDENT TEXTBOOK (CONTAINING EXPLANATIONS AND EXERCISES). *SOURCE
FSOTEXT    OTHER PUBLISHED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
                  WORKSHEETS). *SOURCE
FSLOCAL    LOCALLY PRODUCED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
                  WORKSHEETS). *SOURCE
FSINDIV    COMMERCIALLY OR LOCALLY PRODUCED INDIVIDUALIZED MATERIALS (E.G.,
                  PROGRAMMED INSTRUCTION OR COMPUTER ASSISTED INSTRUCTION).
                  *SOURCE
FSFILM     COMMERCIALLY OR LOCALLY PRODUCED FILMS, FILMSTRIPS, OR TEACHER
                  DEMONSTRATION MODELS. *SOURCE
FSLAB      COMMERCIALLY OR LOCALLY PRODUCED LABORATORY MATERIALS FOR STUDENT
                  USE (E.G., GAMES OR MANIPULATIVES). *SOURCE
7          PART I - TEACHING TOPICS. THE TOPICS GIVEN BELOW MAY BE INCLUDED
                  IN YOUR INSTRUCTIONAL PROGRAM. CIRCLE THE APPROPRIATE RESPONSE
                  CODE TO SHOW WHETHER FOR STUDENTS IN THE TARGET CLASS THE
                  TOPIC WAS...
5          COMMON FRACTIONS
FTFCNPT    DEVELOPING THE CONCEPT. *TAUGHT
FTFEQU     FINDING EQUIVALENT FRACTIONS - INCLUDING REDUCING FRACTIONS.
                  *TAUGHT
FTFADD     ADDING AND SUBTRACTING - INCLUDING FINDING COMMON DENOMINATORS.
                  *TAUGHT
FTFMUL     MULTIPLYING. *TAUGHT
FTFDIV     DIVIDING. *TAUGHT
FTFORD     ORDERING. *TAUGHT
5          DECIMAL FRACTIONS
FTDCNPT    DEVELOPING THE CONCEPT. *TAUGHT
FTDCNV     CONVERTING DECIMAL FRACTIONS TO COMMON FRACTIONS OR VICE VERSA.
                  *TAUGHT
FTDADD     ADDING AND SUBTRACTING. *TAUGHT
FTDMUL     MULTIPLYING. *TAUGHT
FTDDIV     DIVIDING. *TAUGHT
FTDORD     ORDERING. *TAUGHT
7          PART II TEACHING METHODS - COMMON FRACTIONS.
```

```
             NOTE... IF YOU DID NOT TEACH COMMON FRACTIONS, PROCEED
             DIRECTLY TO ITEM (*FDMLINE*).
5            THE INTERPRETATIONS OF FRACTIONS GIVEN BELOW MAY BE INCLUDED IN
              YOUR INSTRUCTIONAL PROGRAM.
4            FRACTIONS AS PARTS OF REGIONS. #
FMFREGE      *CIRCINT *EMPHEXP
FMFREGT      *TEXTINT
3            *REASINT
FMFREGK      *K
FMFREGS      *S
FMFREGU      *U
FMFREGL      *L
FMFREGR      *R
FMFREGF      *F
FMFREGH      *H
FMFREGX      *X
4            FRACTIONS AS PARTS OF A COLLECTION. #
FMFCOLE      *CIRCINT *EMPHEXP
FMFCOLT      *TEXTINT
3            *REASINT
FMFCOLK      *K
FMFCOLS      *S
FMFCOLU      *U
FMFCOLL      *L
FMFCOLR      *R
FMFCOLF      *F
FMFCOLH      *H
FMFCOLX      *X
4            FRACTIONS AS THE COORDINATES OF POINTS ON A NUMBER LINE. #
FMFLINE      *CIRCINT *EMPHEXP
FMFLINT      *TEXTINT
3            *REASINT
FMFLINK      *K
FMFLINS      *S
FMFLINU      *U
FMFLINL      *L
FMFLINR      *R
FMFLINF      *F
FMFLINH      *H
FMFLINX      *X
4            FRACTIONS AS QUOTIENTS. #
FMFQUOE      *CIRCINT *EMPHEXP
FMFQUOT      *TEXTINT
3            *REASINT
FMFQUOK      *K
FMFQUOS      *S
FMFQUOU      *U
FMFQUOL      *L
FMFQUOR      *R
FMFQUOF      *F
FMFQUOH      *H
FMFQUOX      *X
4            FRACTIONS AS DECIMALS. #
FMFDECE      *CIRCINT *EMPHEXP
FMFDECT      *TEXTINT
3            *REASINT
FMFDECK      *K
FMFDECS      *S
FMFDECU      *U
FMFDECL      *L
FMFDECR      *R
```

```
FMFDECF    *F
FMFDECH    *H
FMFDECX    *X
4          FRACTIONS AS REPEATED ADDITION OF A UNIT FRACTION. #
FMFREPE    *CIRCINT *EMPHEXP
FMFREPT    *TEXTINT
3          *REASINT
FMFREPK    *K
FMFREPS    *S
FMFREPU    *U
FMFREPL    *L
FMFREPR    *R
FMFREPF    *F
FMFREPH    *H
FMFREPX    *X
4          FRACTIONS AS RATIOS. #
FMFRATE    *CIRCINT *EMPHEXP
FMFRATT    *TEXTINT
3          *REASINT
FMFRATK    *K
FMFRATS    *S
FMFRATU    *U
FMFRATL    *L
FMFRATR    *R
FMFRATF    *F
FMFRATH    *H
FMFRATX    *X
4          FRACTIONS AS MEASUREMENTS. #
FMFMSRE    *CIRCINT *EMPHEXP
FMFMSRT    *TEXTINT
3          *REASINT
FMFMSRK    *K
FMFMSRS    *S
FMFMSRU    *U
FMFMSRL    *L
FMFMSRR    *R
FMFMSRF    *F
FMFMSRH    *H
FMFMSRX    *X
4          FRACTIONS AS OPERATORS. #
FMFOPRE    *CIRCINT *EMPHEXP
FMFOPRT    *TEXTINT
3          *REASINT
FMFOPRK    *K
FMFOPRS    *S
FMFOPRU    *U
FMFOPRL    *L
FMFOPRR    *R
FMFOPRF    *F
FMFOPRH    *H
FMFOPRX    *X
4          FRACTIONS AS COMPARISONS. #
FMFCMPE    *CIRCINT *EMPHEXP
FMFCMPT    *TEXTINT
3          *REASINT
FMFCMPK    *K
FMFCMPS    *S
FMFCMPU    *U
FMFCMPL    *L
FMFCMPR    *R
FMFCMPF    *F
```

```
FMFCMPH    *H
FMFCMPX    *X
5          ADDITION OF FRACTIONS. THE INTERPRETATIONS OF THE ADDITION OF
              FRACTIONS GIVEN BELOW MAY BE INCLUDED IN YOUR INSTRUCTIONAL
              PROGRAM. CIRCLE THE APPROPRIATE RESPONSE CODE TO SHOW WHETHER
              FOR STUDENTS IN THE TARGET CLASS, THE INTERPRETATION WAS...
FMAFREG    THE SUM OF TWO FRACTIONS AS THE UNION OF TWO REGIONS. # *EMPHEXP
FMAFCOL    THE SUM OF TWO FRACTIONS AS THE COMBINATION OF FRACTIONAL PARTS
              OF A COLLECTION. # *EMPHEXP
FMAFLIN    THE SUM OF TWO FRACTIONS ON THE NUMBER LINE. # *EMPHEXP
FMAFQUO    THE SUM OF TWO FRACTIONS AS THE SUM OF TWO QUOTIENTS. # *EMPHEXP
FMAFDEC    THE SUM OF TWO FRACTIONS AS THE SUM OF TWO DECIMALS. # *EMPHEXP
FMAFREP    THE SUM OF TWO FRACTIONS USING FRACTIONS AS REPEATED ADDITION OF
              THE UNIT FRACTIONS. # *EMPHEXP
FMAFMSR    THE SUM OF TWO FRACTIONS AS A COMBINATION OF TWO MEASUREMENTS. #
              *EMPHEXP
FMAFSEG    THE SUM OF TWO FRACTIONS AS JOINING TWO SEGMENTS. # *EMPHEXP
5          PROCEDURES FOR ADDING FRACTIONS. THE PROCEDURES FOR ADDING
              FRACTIONS GIVEN BELOW MAY BE INCLUDED IN YOUR INSTRUCTIONAL
              PROGRAM. CIRCLE THE APPROPRIATE RESPONSE CODE TO SHOW WHETHER
              FOR STUDENTS IN THE TARGET CLASS THE PROCEDURE WAS...
FMPALDH    USING THE LEAST COMMON DENOMINATOR IN A HORIZONTAL FORMAT. #
              *EMPHPRO
FMPALDV    USING THE LEAST COMMON DENOMINATOR IN A VERTICAL FORMAT. #
              *EMPHPRO
FMPAFOR    USING THE 'FORMULA' ... # *EMPHPRO
FMPACDH    USING ANY COMMON DENOMINATOR IN A HORIZONTAL FORMAT. # *EMPHPRO
FMPACDV    USING ANY COMMON DENOMINATOR IN A VERTICAL FORMAT. # *EMPHPRO
FMPADEC    USING DECIMALS. # *EMPHPRO
5          TECHNIQUES FOR ADDING FRACTIONS
FMAFSYM    WHICH OF THE FOLLOWING BEST DESCRIBES THE TECHNIQUE YOU USED IN
              TEACHING THE ADDITION OF FRACTIONS? (CIRCLE ONLY ONE
              RESPONSE).
              /1 I PRESENTED ONLY NUMERICAL EXAMPLES DEMONSTRATING THE
              PROCEDURES(S). # =NUMRCL EXAMPLES
              /2 I FIRST USED NUMERICAL EXAMPLES AND THEN PRESENTED THE
              PROCEDURE SYMBOLICALLY (I.E., THE GENERAL CASE). # =NUMERIC
              FIRST
              /3 I FIRST PRESENTED THE PROCEDURE SYMBOLICALLY (I.E., THE
              GENERAL CASE), AND THEN ILLUSTRATED IT WITH NUMERICAL
              EXAMPLES. # =SYMBOLIC FIRST
7          PART III TEACHING METHODS - DECIMAL FRACTIONS.
5          THE INTERPRETATIONS
              OF DECIMALS GIVEN BELOW MAY BE INCLUDED IN YOUR INSTRUCTIONAL
              PROGRAM.
4          A DECIMAL AS THE COORDINATE OF A POINT ON THE NUMBER LINE. #
FMDLINE    *CIRCINT *EMPHEXP
FMDLINT    *TEXTINT
3          *REASINT
FMDLINK    *K
FMDLINS    *S
FMDLINU    *U
FMDLINL    *L
FMDLINR    *R
FMDLINF    *F
FMDLINH    *H
FMDLINX    *X
4          A DECIMAL AS ANOTHER WAY OF WRITING A FRACTION. #
FMDFRCE    *CIRCINT *EMPHEXP
FMDFRCT    *TEXTINT
3          *REASINT
```

```
FMDFRCK    *K
FMDFRCS    *S
FMDFRCU    *U
FMDFRCL    *L
FMDFRCR    *R
FMDFRCF    *F
FMDFRCH    *H
FMDFRCX    *X
4          A DECIMAL AS A PART OF A REGION. #
FMDREGE    *CIRCINT *EMPHEXP
FMDREGT    *TEXTINT
3          *REASINT
FMDREGK    *K
FMDREGS    *S
FMDREGU    *U
FMDREGL    *L
FMDREGR    *R
FMDREGF    *F
FMDREGH    *H
FMDREGX    *X
4          A DECIMAL AS AN EXTENSION OF PLACE VALUE. #
FMDPLVE    *CIRCINT *EMPHEXP
FMDPLVT    *TEXTINT
3          *REASINT
FMDPLVK    *K
FMDPLVS    *S
FMDPLVU    *U
FMDPLVL    *L
FMDPLVR    *R
FMDPLVF    *F
FMDPLVH    *H
FMDPLVX    *X
4          A DECIMAL AS A SERIES. #
FMDSERE    *CIRCINT *EMPHEXP
FMDSERT    *TEXTINT
3          *REASINT
FMDSERK    *K
FMDSERS    *S
FMDSERU    *U
FMDSERL    *L
FMDSERR    *R
FMDSERF    *F
FMDSERH    *H
FMDSERX    *X
4          A DECIMAL AS A COMPARISON. #
FMDCMPE    *CIRCINT *EMPHEXP
FMDCMPT    *TEXTINT
3          *REASINT
FMDCMPK    *K
FMDCMPS    *S
FMDCMPU    *U
FMDCMPL    *L
FMDCMPR    *R
FMDCMPF    *F
FMDCMPH    *H
FMDCMPX    *X
5          OPERATIONS WITH DECIMALS. SEVERAL TECHNIQUES A TEACHER MIGHT USE
              IN TEACHING OPERATIONS WITH DECIMALS ARE LISTED BELOW. CIRCLE
              THE APPROPRIATE RESPONSE CODE TO SHOW WHETHER FOR STUDENTS IN
              THE TARGET CLASS THE TECHNIQUE WAS...
FMODFRC    RELATE OPERATIONS WITH DECIMALS TO OPERATIONS WITH FRACTIONS. #
```

```
              *EMPHEXP
FMODWHL    RELATE OPERATIONS WITH DECIMALS TO OPERATIONS WITH WHOLE NUMBERS,
              TEACHING RULES FOR PLACING THE DECIMAL POINT. # *EMPHEXP
FMODMAT    USE CONCRETE MATERIALS TO ILLUSTRATE OPERATIONS WITH DECIMALS. #
              *EMPHEXP
7          PART IV TIME ALLOCATIONS.
FPSIZE     WHAT WAS THE AVERAGE LENGTH (IN MINUTES) OF EACH OF THE TARGET
              CLASS MATHEMATICS PERIODS?
5          COMMON FRACTIONS.
FPFTOT     HOW MANY TOTAL CLASS PERIODS DID YOU SPEND ON TEACHING COMMON
              FRACTIONS? (COMBINE PARTIAL PERIODS WHEN NECESSARY).
3          *ACTTIME
2          *CONCEPT ... ACTIVITIES RELATED TO...
FPFCNPT    DEVELOPING THE CONCEPT OF FRACTIONS.
FPFEQU     FINDING EQUIVALENT FRACTIONS -- INCLUDING REDUCING FRACTIONS.
FPFADD     ADDING AND SUBTRACTING -- INCLUDING FINDING COMMON DENOMINATORS.
FPFMUL     MULTIPLYING FRACTIONS.
FPFDIV     DIVIDING FRACTIONS.
FPFORD     ORDERING FRACTIONS.
2
FPFPROB    APPLICATIONS//PROBLEM SOLVING ACTIVITIES RELATED TO
               FRACTIONS -- (TEXTBOOK WORD
              PROBLEMS, PROBLEMS RELATED TO REAL WORLD SITUATIONS,
              RECREATIONAL PROBLEMS, CHALLENGING PROBLEMS, ETC.)
5          DECIMAL FRACTIONS.
FPDTOT     HOW MANY TOTAL CLASS PERIODS DID YOU SPEND ON TEACHING DECIMAL
              FRACTIONS? (COMBINE PARTIAL PERIODS WHEN NECESSARY).
3          *ACTTIME
2          *CONCEPT ... ACTIVITIES RELATED TO...
FPDCNPT    DEVELOPING THE CONCEPT OF DECIMALS.
FPDCNV     CONVERTING DECIMAL FRACTIONS TO COMMON FRACTIONS OR VICE VERSA.
FPDADD     ADDING AND SUBTRACTING DECIMALS.
FPDMUL     MULTIPLYING DECIMALS.
FPDDIV     DIVIDING DECIMALS.
FPDORD     ORDERING DECIMALS.
2
FPDPROB    APPLICATIONS//PROBLEM SOLVING ACTIVITIES RELATED TO
               DECIMALS -- (TEXTBOOK WORD
              PROBLEMS, PROBLEMS RELATED TO REAL WORLD SITUATIONS,
              RECREATIONAL PROBLEMS, CHALLENGING PROBLEMS, ETC.)
7          PART V - OPINIONS. INDICATE (CIRCLE) THE EXTENT TO WHICH YOU AGREE
              OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS RELATIVE TO
              YOUR TARGET CLASS.
FOFCOMP    COMPUTATION WITH COMMON FRACTIONS SHOULD BE TAUGHT. *AGGDIS
FOSKILL    THE DEGREE TO WHICH THE STUDENTS ARE SKILLED IN COMPUTING IS AN
              INDICATOR OF THEIR UNDERSTANDING OF FRACTIONS AND//OR
              DECIMALS. *AGGDIS
FOFDEL     COMPUTATIONS WITH COMMON FRACTIONS SHOULD BE DELAYED UNTIL
              STUDENTS ARE AT LEAST 12-13 YEARS OF AGE. *AGGDIS
FOCALC     COMPUTATIONS WITH DECIMALS AND COMMON FRACTIONS SHOULD BE DONE
              WITH HAND-HELD CALCULATORS. *AGGDIS
FOFSMAL    ONLY COMMON FRACTIONS WITH SMALL DENOMINATORS SHOULD BE TAUGHT
              (E.G., 1//2, 1//3, ETC.). *AGGDIS
FODRILL    IT IS IMPORTANT TO DRILL ON COMPUTATION WITH COMMON FRACTIONS AND
              DECIMALS UNTIL STUDENTS ARE VERY GOOD AT COMPUTING. *AGGDIS
FORULES    RULES FOR OPERATIONS WITH COMMON FRACTIONS AND DECIMALS SHOULD BE
              MEMORIZED. *AGGDIS
FOAPPL     EMPHASIS SHOULD BE PLACED ON TEACHING APPLICATIONS INVOLVING
              COMMON FRACTIONS AND DECIMALS. *AGGDIS
FOPROB     PROBLEM SOLVING ACTIVITIES AND APPLICATIONS WITH COMMON FRACTIONS
              AND DECIMALS SHOULD BE EMPHASIZED MORE THAN COMPUTATIONS WITH
```

FRACTIONS AND DECIMALS. *AGGDIS
FOFSTRC    IN TEACHING COMMON FRACTIONS IT IS IMPORTANT THAT STRUCTURAL
           PROPERTIES (DISTRIBUTIVITY, ASSOCIATIVITY, COMMUTATIVITY,
           IDENTITY, INVERSE ELEMENTS) BE EMPHASIZED. *AGGDIS
FOESTIM    ESTIMATION, APPROXIMATION, AND CHECKING THE REASONABLENESS OF AN
           ANSWER ARE MORE IMPORTANT THAN BECOMING SKILLED IN COMPUTING
           WITH COMMON FRACTIONS AND DECIMALS. *AGGDIS
FODEC      DECIMALS AND THEIR OPERATIONS SHOULD BE EMPHASIZED MORE THAN
           COMMON FRACTIONS AND THEIR OPERATIONS. *AGGDIS
FOMENT     MENTAL CALCULATION SHOULD BE EMPHASIZED WITH COMMON FRACTIONS AND
           DECIMALS. *AGGDIS
FOOCDF     INSTRUCTION ON COMMON FRACTIONS SHOULD PRECEDE INSTRUCTION ON
           DECIMALS. *AGGDIS
FOOAMF     INSTRUCTION ON ADDITION OF COMMON FRACTIONS (LIKE AND UNLIKE
           DENOMINATORS) SHOULD PRECEDE INSTRUCTIONS ON MULTIPLICATION OF
           FRACTIONS. *AGGDIS
FOLCM      IT IS IMPORTANT FOR STUDENTS TO KNOW HOW TO FIND THE LEAST COMMON
           MULTIPLE OF TWO WHOLE NUMBERS. *AGGDIS
FOGCF      IT IS IMPORTANT FOR STUDENTS TO KNOW HOW TO FIND THE GREATEST
           COMMON FACTOR OF TWO WHOLE NUMBERS. *AGGDIS
FOFRDUC    WHEN REDUCING FRACTIONS, STUDENTS SHOULD FIRST FIND THE GREATEST
           COMMON FACTOR (GCF) OF THE NUMERATOR AND DENOMINATOR AND THEN
           DIVIDE THE NUMERATOR AND THE DENOMINATOR BY THE GCF. *AGGDIS
.................................................................................
.          TEACHER CLASSROOM PROCESSES TOPIC SPECIFIC QUESTIONNAIRE          .
.                    RATIO, PROPORTION, AND PERCENT                          .
.................................................................................
9          TEACHER CLASSROOM PROCESSES QUESTIONNAIRE - RATIO, PROPORTION,
           AND PERCENT. ...
           CHECK HERE IF NONE OF RATIO, PROPORTION, OR PERCENT IS INCLUDED
           IN YOUR PROGRAM FOR THE TARGET CLASS. DISREGARD THE REST OF
           THIS QUESTIONNAIRE AND RETURN IT.
7          CIRCLE THE RESPONSE WHICH BEST DESCRIBES THE USE YOU MADE OF EACH
           OF THE FOLLOWING MATERIALS IN YOUR INSTRUCTION ON RATIO,
           PROPORTION, OR PERCENT.
RSTEXT     STUDENT TEXTBOOK (CONTAINING EXPLANATIONS AND EXERCISES). *SOURCE
RSOTEXT    OTHER PUBLISHED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
           WORKSHEETS). *SOURCE
RSLOCAL    LOCALLY PRODUCED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
           WORKSHEETS). *SOURCE
RSINDIV    COMMERCIALLY OR LOCALLY PRODUCED INDIVIDUALIZED MATERIALS (E.G.,
           PROGRAMMED INSTRUCTION OR COMPUTER ASSISTED INSTRUCTION).
           *SOURCE
RSFILM     COMMERCIALLY OR LOCALLY PRODUCED FILMS, FILMSTRIPS, OR TEACHER
           DEMONSTRATION MODELS. *SOURCE
RSLAB      COMMERCIALLY OR LOCALLY PRODUCED LABORATORY MATERIALS FOR STUDENT
           USE (E.G., GAMES OR MANIPULATIVES). *SOURCE
7          PART I - TEACHING TOPICS. THE TOPICS GIVEN BELOW MAY BE INCLUDED
           IN YOUR INSTRUCTIONAL PROGRAM. CIRCLE THE APPROPRIATE RESPONSE
           CODE TO SHOW WHETHER FOR STUDENTS IN THE TARGET CLASS THE
           TOPIC WAS...
RTRATIO    THE CONCEPT OF RATIO. *TAUGHT
RTPROP     THE CONCEPT OF PROPORTION. *TAUGHT
RTPREQU    SOLVING PROPORTIONAL EQUATIONS. *TAUGHT
RTPCT      THE CONCEPT OF PERCENT. *TAUGHT
RTCOMP     COMPUTING PERCENTS... FIND A PERCENT OF A GIVEN NUMBER OR FIND WHAT
           PERCENT ONE NUMBER IS OF ANOTHER. *TAUGHT
RTCHGPF    CHANGING PERCENTS TO COMMON FRACTIONS. *TAUGHT
RTCHGPD    CHANGING PERCENTS TO DECIMAL FRACTIONS. *TAUGHT
RTCHGFP    CHANGING COMMON FRACTIONS TO PERCENTS. *TAUGHT
RTCHGDP    CHANGING DECIMAL FRACTIONS TO PERCENTS. *TAUGHT

```
RTBIGP     PERCENTS GREATER THAN 100 PERCENT. *TAUGHT
RTSMAP     PERCENTS LESS THAN 1 PERCENT. *TAUGHT
7          PART II - TEACHING METHODS.
5          THE INTERPRETATIONS GIVEN BELOW MAY BE INCLUDED IN YOUR
              INSTRUCTIONAL PROGRAM. *CIRCINT
RMRRATE    RATIO AS A RATE. # *EMPHEXP
RMRCOMP    RATIO AS A COMPARISON. # *EMPHEXP
RMRFRAC    RATIO AS A FRACTION. # *EMPHEXP
RMRQUOT    RATIO AS A QUOTIENT OF TWO WHOLE NUMBERS. # *EMPHEXP
RMPFRAC    PERCENT AS A FRACTION (I.E., A SYNONYM FOR HUNDREDTHS). #
              *EMPHEXP
RMPRATO    PERCENT AS A RATIO WITH A SECOND TERM OF 100. # *EMPHEXP
5          THE INTERPRETATIONS OF PROPORTIONS GIVEN BELOW MAY BE INCLUDED IN
              YOUR INSTRUCTIONAL PROGRAM.
4          PROPORTIONS AS EQUIVALENT RATIOS. #
RMPEQRE    *CIRCINT *EMPHEXP
RMPEQRT    *TEXTINT
3          *REASINT
RMPEQRK    *K
RMPEQRS    *S
RMPEQRU    *U
RMPEQRL    *L
RMPEQRR    *R
RMPEQRF    *F
RMPEQRH    *H
RMPEQRX    *X
4          PROPORTIONS AS EQUIVALENT COMPARISONS. #
RMPEQCE    *CIRCINT *EMPHEXP
RMPEQCT    *TEXTINT
3          *REASINT
RMPEQCK    *K
RMPEQCS    *S
RMPEQCU    *U
RMPEQCL    *L
RMPEQCR    *R
RMPEQCF    *F
RMPEQCH    *H
RMPEQCX    *X
4          PROPORTIONS AS EQUIVALENT FRACTIONS. #
RMPEQFE    *CIRCINT *EMPHEXP
RMPEQFT    *TEXTINT
3          *REASINT
RMPEQFK    *K
RMPEQFS    *S
RMPEQFU    *U
RMPEQFL    *L
RMPEQFR    *R
RMPEQFF    *F
RMPEQFH    *H
RMPEQFX    *X
4          PROPORTIONS AS EQUIVALENT QUOTIENTS. #
RMPEQQE    *CIRCINT *EMPHEXP
RMPEQQT    *TEXTINT
3          *REASINT
RMPEQQK    *K
RMPEQQS    *S
RMPEQQU    *U
RMPEQQL    *L
RMPEQQR    *R
RMPEQQF    *F
RMPEQQH    *H
```

```
RMPEQQX    *X
5          PROCEDURES FOR SOLVING PROPORTIONS. THE PROCEDURES FOR SOLVING
             PROPORTIONS GIVEN BELOW MAY BE INCLUDED IN YOUR INSTRUCTIONAL
             PROGRAM. *CIRCPRO
RMSPMUL    USING MULTIPLICATION OR DIVISION TO EQUATE NUMERATORS AND
             DENOMINATORS. # *EMPHPRO
RMSPXP     FINDING THE CROSS PRODUCTS AND THEN SOLVING THE RESULTING
             EQUATION. # *EMPHPRO
RMSPDIV    DIVIDING THE TERMS OF ONE RATIO AND THEN SOLVING THE RESULTING
             EQUATION. # *EMPHPRO
5          TECHNIQUES FOR SOLVING PROPORTIONS
RMSPSYM    WHICH OF THE FOLLOWING BEST DESCRIBES THE TECHNIQUE YOU USED IN
             TEACHING A PROCEDURE FOR SOLVING PROPORTIONAL EQUATIONS?
             (CIRCLE ONLY ONE OF A, B, OR C).
             /1 I PRESENTED ONLY NUMERICAL EXAMPLES DEMONSTRATING THE
             PROCEDURE(S). # =ONLY NUMERIC
             /2 I FIRST USED NUMERICAL EXAMPLES AND THEN PRESENTED THE
             PROCEDURE SYMBOLICALLY (I.E., THE GENERAL CASE). # =NUM THEN
             SYM
             /3 I FIRST PRESENTED THE PROCEDURE SYMBOLICALLY (I.E., THE
             GENERAL CASE) AND THEN ILLUSTRATED IT WITH NUMERICAL EXAMPLES.
             # =SYM THEN NUM
7          PART III - APPLICATIONS AND PROBLEM SOLVING.
5          SEVERAL METHODS OF
             SOLVING PROBLEMS INVOLVING PROPORTIONS ARE LISTED BELOW.
             *CIRCMET
RAPRSN     USE PROPORTIONAL REASONING WITHOUT AN EQUATION. # *EMPHMET
RAPREQU    USE A PROPORTIONAL EQUATION. # *EMPHMET
RAUNIT     USE THE UNIT METHOD WITHOUT AN EQUATION. # *EMPHMET
5          APPLICATIONS AND PROBLEMS. SEVERAL
             APPLICATIONS OF RATIO AND PROPORTIONS ARE LISTED BELOW.
             *CIRCAPP
RAMODEL    SCALE MODELS (AIRPLANES, AUTOMOBILES). *EMPHAPP
RAMAP      FINDING DISTANCES FROM MAPS. *EMPHAPP
RADRAW     SCALE DRAWINGS. *EMPHAPP
RASAMP     CALCULATING THE SIZE OF A POPULATION FROM A SAMPLE ESTIMATE.
             *EMPHAPP
RACOST     PROBLEMS INVOLVING BUYING DECISIONS BASED ON COST RATES. #
             *EMPHAPP
RAMIX      MIXTURE OR RECIPE PROBLEMS. *EMPHAPP
RARWTRI    REAL WORLD PROBLEMS USING SIMILAR TRIANGLES. # *EMPHAPP
RACOMM     COMMISSION. *EMPHAPP
RADISC     DISCOUNT. *EMPHAPP
RAWP       GENERAL WORD PROBLEMS. # *EMPHAPP
RAINST     SIMPLE OR COMPOUND INTEREST. *EMPHAPP
RAINCRS    PERCENT OF INCREASE OR DECREASE. *EMPHAPP
RAGRAPH    CIRCLE OR BAR GRAPHS. *EMPHAPP
5          SOURCES OF APPLICATIONS AND PROBLEMS. SEVERAL
             SOURCES OF APPLICATIONS//PROBLEMS OF RATIO, PROPORTION, AND
             PERCENT ARE LISTED BELOW. *CIRCSRC
RUTEXT     STUDENTS' TEXTBOOKS. *USEDSRC
RUSTEXT    SUPPLEMENTARY TEXTBOOKS OR WORKBOOKS. *USEDSRC
RULOCAL    WORKSHEETS OR EXERCISES DESIGNED BY MYSELF OR LOCAL TEACHERS.
             *USEDSRC
RUGUIDE    THE CURRICULUM GUIDE OR SYLLABUS. *USEDSRC
RUPPUB     PUBLICATIONS OF PROFESSIONAL ASSOCIATIONS. *USEDSRC
RUSTDS     APPLICATIONS OR PROBLEMS SUGGESTED BY MY STUDENTS. *USEDSRC
RUREALW    APPLICATIONS OR PROBLEMS FROM REAL-WORLD SOURCES, SUCH AS
             NEWSPAPERS OR INDIVIDUALS INVOLVED IN THE USE OF MATHEMATICS.
             *USEDSRC
5          METHODS OF SOLVING PERCENT PROBLEMS.
```

```
                FOUR METHODS OF SOLVING PERCENT PROBLEMS ARE LISTED BELOW
                 FOR EACH OF THREE TYPES OF PERCET PROBLEMS.  INDICATE FOR
                 EACH TYPE WHETHER THE METHOD WAS...
*USEHERE   /1 EMPHASIZED (USED AS PRIMARY PROCEDURE FOR THIS TYPE OF
                 PROBLEM)=EMPHASIZED
                 /2 TAUGHT, BUT NOT AS A PRIMARY PROCEDURE FOR THIS TYPE OF
                 PROBLEM=TAUGHT NOT EMPH
                 /3 NOT TAUGHT
3          TYPE I. GIVEN THE BASE AND PERCENT FIND THE PERCENTAGE. #
RMPPEQ1    THE EQUATION METHOD. # *USEHERE
RMPPPR1    THE PROPORTION METHOD. # *USEHERE
RMPPAR1    THE ARITHMETIC METHOD. # *USEHERE
RMPPUN1    THE UNIT METHOD. # *USEHERE
3          TYPE II. GIVEN THE BASE AND PERCENTAGE, FIND THE PERCENT. #
RMPPEQ2    THE EQUATION METHOD. # *USEHERE
RMPPPR2    THE PROPORTION METHOD. # *USEHERE
RMPPAR2    THE ARITHMETIC METHOD. # *USEHERE
RMPPUN2    THE UNIT METHOD. # *USEHERE
3          TYPE III. GIVEN PERCENT AND PERCENTAGE, FIND THE BASE. #
RMPPEQ3    THE EQUATION METHOD. # *USEHERE
RMPPPR3    THE PROPORTION METHOD. # *USEHERE
RMPPAR3    THE ARITHMETIC METHOD. # *USEHERE
RMPPUN3    THE UNIT METHOD. # *USEHERE
7          PART IV - TIME ALLOCATIONS FOR TEACHING ACTIVITIES.
RPSIZE     WHAT WAS THE AVERAGE LENGTH (IN MINUTES) OF EACH OF THE TARGET
                 CLASS MATHEMATICS PERIODS?
RPTOTAL    HOW MANY TOTAL CLASS PERIODS DID YOU SPEND ON TEACHING RATIO,
                 PROPORTION, AND PERCENT? (COMBINE PARTIAL PERIODS WHEN
                 NECESSARY.)
3          *ACTTIME
2          *CONCEPT ... ACTIVITIES RELATED TO...
RPRATIO    DEVELOPING THE CONCEPT OF RATIO.
RPPROP     DEVELOPING THE CONCEPT OF PROPORTION.
RPPREQU    SOLVING PROPORTIONAL EQUATIONS.
2
RPRAPPL    APPLICATION//PROBLEM SOLVING ACTIVITIES RELATED TO
                 RATIO AND PROPORTIONS --
                 (TEXTBOOK WORD PROBLEMS, PROBLEMS RELATED TO REAL WORLD
                 SITUATIONS, RECREATIONAL PROBLEMS, CHALLENGING PROBLEMS,
                 ETC.).
2          *CONCEPT ... ACTIVITIES RELATED TO...
RPPCT      DEVELOPING THE CONCEPT OF PERCENT.
RPCOMP     COMPUTING WITH PERCENT.
RPCHGPF    CHANGING PERCENTS TO COMMON FRACTIONS.
RPCHGPD    CHANGING PERCENTS TO DECIMAL FRACTIONS.
RPCHGFP    CHANGING COMMON FRACTIONS TO PERCENTS.
RPCHGDP    CHANGING DECIMAL FRACTIONS TO PERCENTS.
2
RPPAPPL    APPLICATION//PROBLEM SOLVING ACTIVITIES RELATED TO
                 PERCENTS -- (TEXTBOOK WORD
                 PROBLEMS, PROBLEMS RELATED TO REAL WORLD SITUATIONS,
                 RECREATIONAL PROBLEMS, CHALLENGING PROBLEMS, ETC.).
7          PART V - OPINIONS. INDICATE (CIRCLE) THE EXTENT TO WHICH YOU
                 AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS
                 RELATIVE TO YOUR TARGET CLASS.
RORELAT    THE STUDY OF PERCENT SHOULD BE RELATED TO THE STUDY OF
                 PROPORTION. *AGGDIS
ROOPRP     THE STUDY OF PERCENT SHOULD PRECEDE THE STUDY OF RATIO AND
                 PROPORTION. *AGGDIS
RODELLE    THE STUDY OF PROPORTION SHOULD BE DELAYED UNTIL THE STUDENTS
                 LEARN HOW TO SOLVE LINEAR EQUATIONS. *AGGDIS
```

```
RODELP     THE STUDY OF PROPORTION SHOULD BE DELAYED BEYOND THIS GRADE
              LEVEL. *AGGDIS
ROARITH    THE STUDENTS SHOULD INITIALLY LEARN HOW TO SOLVE PROPORTIONAL
              PROBLEMS USING ARITHMETICAL METHODS (WITHOUT SETTING UP
              PROPORTIONAL EQUATIONS). *AGGDIS
ROSKILL    THE DEGREE TO WHICH THE STUDENTS ARE SKILLED AT COMPUTING WHEN
              SOLVING PROPORTIONS IS AN INDICATOR OF THEIR UNDERSTANDING OF
              PROPORTIONS. *AGGDIS
ROIDENT    STUDENTS SHOULD BE TAUGHT TO IDENTIFY EACH OF THE THREE TYPES OF
              PERCENT PROBLEMS BEFORE SOLVING THEM. *AGGDIS
ROSPEC     STUDENTS SHOULD BE GIVEN A SPECIFIC PROCEDURE FOR EACH OF THE
              THREE TYPES OF PERCENT PROBLEMS. *AGGDIS
ROCALC     COMPUTATION WITH PERCENT SHOULD BE DONE WITH HAND-HELD
              CALCULATORS. *AGGDIS
ROAPPL     APPLICATIONS WITH PROPORTION SHOULD BE EMPHASIZED MORE THAN
              SOLVING PROPORTIONAL EQUATIONS. *AGGDIS
ROCNSMR    APPLICATIONS INVOLVING CONSUMER ARITHMETIC (DISCOUNT, INTEREST,
              ETC.) SHOULD BE EMPHASIZED WHEN STUDENTS STUDY
              PERCENT. *AGGDIS
ROFRAC     RATIO SHOULD BE TAUGHT AS FRACTIONS OR QUOTIENTS RATHER THAN AS
              RATES OR COMPARISONS OF COLLECTIONS. *AGGDIS
...............................................................................
.          TEACHER CLASSROOM PROCESSES TOPIC SPECIFIC QUESTIONNAIRE        .
.                               MEASUREMENT                                .
...............................................................................
9          TEACHER CLASSROOM PROCESS QUESTIONNAIRE - MEASUREMENT. ...
              CHECK HERE IF MEASUREMENT IS NOT INCLUDED IN YOUR PROGRAM FOR THE
              TARGET CLASS. DISREGARD THE REMAINDER OF THIS QUESTIONNAIRE
              AND RETURN IT.
7          CIRCLE THE RESPONSE WHICH BEST DESCRIBES THE USE YOU MADE OF EACH
              OF THE FOLLOWING MATERIALS IN YOUR INSTRUCTION ON MEASUREMENT.
MSTEXT     STUDENT TEXTBOOK (CONTAINING EXPLANATIONS AND EXERCISES). *SOURCE
MSOTEXT    OTHER PUBLISHED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
              WORKSHEETS). *SOURCE
MSLOCAL    LOCALLY PRODUCED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
              WORKSHEETS). *SOURCE
MSINDIV    COMMERCIALLY OR LOCALLY PRODUCED INDIVIDUALIZED MATERIALS (E.G.,
              PROGRAMMED INSTRUCTION OR COMPUTER ASSISTED INSTRUCTION).
              *SOURCE
MSFILM     COMMERCIALLY OR LOCALLY PRODUCED FILMS, FILMSTRIPS, OR TEACHER
              DEMONSTRATION MODELS. *SOURCE
MSLAB      COMMERCIALLY OR LOCALLY PRODUCED LABORATORY MATERIALS FOR STUDENT
              USE (E.G., GAMES OR MANIPULATIVES). *SOURCE
7          PART I - TEACHING TOPICS. THE TOPICS GIVEN BELOW MAY BE INCLUDED
              IN YOUR INSTRUCTIONAL PROGRAM. CIRCLE THE APPROPRIATE RESPONSE
              CODE TO SHOW WHETHER FOR STUDENTS IN THE TARGET CLASS THE
              TOPIC WAS...
MTCNCPT    CONCEPT OF MEASUREMENT (INCLUDING SELECTION OF UNIT AND USE OF
              UNIT TO ASSIGN A NUMBER). *TAUGHT
MTMET      NAMES OF UNITS OF MEASURES IN THE METRIC SYSTEM (SI). *TAUGHT
MTENG      NAMES OF UNITS OF MEASURES IN THE ENGLISH SYSTEM (SUCH AS POUNDS,
              MILES, GALLONS, ETC.). *TAUGHT
MTCONVW    CONVERSION OF UNITS WITHIN A SYSTEM. # *TAUGHT
MTCONVB    CONVERSION OF UNITS BETWEEN SYSTEMS. # *TAUGHT
MTESTIM    ESTIMATING MEASUREMENTS. # *TAUGHT
MTOPER     OPERATIONS WITH MEASUREMENTS. # *TAUGHT
MTPREC     PRECISION, ACCURACY, PERCENT ERROR AND RELATIVE ERROR. *TAUGHT
MTPI       CONCEPT OF PI. *TAUGHT
MTLINM     LINEAR MEASUREMENT. # *TAUGHT
MTPPOLY    PERIMETER OF POLYGONS (INCLUDING TRIANGLES, QUADRILATERALS AND
              OTHER POLYGONS). *TAUGHT
```

```
MTCCIRC    CIRCUMFERENCE OF A CIRCLE. *TAUGHT
MTATRI     AREA OF A TRIANGLE. *TAUGHT
MTARECT    AREA OF RECTANGLES (INCLUDING SQUARES). *TAUGHT
MTAPARA    AREA OF PARALLELOGRAMS OTHER THAN RECTANGLES. *TAUGHT
MTATRAP    AREA OF A TRAPEZOID. *TAUGHT
MTACIRC    AREA OF A CIRCLE. *TAUGHT
MTSRECT    SURFACE AREA OF RECTANGULAR SOLIDS (INCLUDING CUBES). *TAUGHT
MTSCYLN    SURFACE AREA OF CYLINDERS. *TAUGHT
MTSSPH     SURFACE AREA OF SPHERES. *TAUGHT
MTVRECT    VOLUME OF RECTANGULAR SOLIDS (INCLUDING CUBES). *TAUGHT
MTVCYLN    VOLUME OF CYLINDERS AND PRISMS. *TAUGHT
MTVSPH     VOLUME OF SPHERES. *TAUGHT
MTVCONE    VOLUME OF CONES AND PYRAMIDS. *TAUGHT
7          PART II - INSTRUCTIONAL AIDS. SEVERAL AIDS WHICH MIGHT BE USED IN
              TEACHING MEASUREMENT ARE GIVEN BELOW. CIRCLE THE APPROPRIATE
              RESPONSE CODE TO INDICATE THE DEGREE TO WHICH YOU AND THE
              STUDENTS IN THE TARGET CLASS USED EACH AID.
MAIDRUL    RULERS (METERSTICK, YARDSTICK, 12-INCH RULER, ETC.). *USAGE
MAIDTAP    MEASURING TAPE. *USAGE
MAIDWHL    TRUNDLE WHEEL. *USAGE
MAIDNSU    AIDS REPRESENTING NON-STANDARD UNITS OF MEASUREMENT (PAPER CLIPS,
              HAND SPANS, FOOT LENGTHS, POPSICLE STICKS, SUGAR CUBES,
              MATCHBOXES, ETC.). *USAGE
MAIDGEO    GEOBOARDS, GRAPH PAPER, OR GRIDS. *USAGE
MAIDSU     AIDS REPRESENTING STANDARD UNITS FOR AREA
              (CENTIMETER SQUARES, CENTIMETER CUBES
              OR RODS, ETC.). *USAGE
MAIDCYL    GRADUATED CYLINDERS. *USAGE
MAIDCON    CONTAINERS (LITER, GALLON, ETC.). *USAGE
MAIDMOD    FILLABLE MODELS OF GEOMETRIC SOLIDS. *USAGE
7          PART III - TEACHING METHODS.
5          THE METHODS USED TO INTRODUCE THE
              USE OF UNITS OF MEASUREMENT GIVEN BELOW MAY HAVE BEEN INCLUDED
              IN YOUR INSTRUCTIONAL PROGRAM. *CIRCINT
MMNSU      I HAVE MY STUDENTS USE NON-STANDARD UNITS OF MEASUREMENT. #
              *EMPHMET
MMSU       I HAVE MY STUDENTS USE STANDARD UNITS IN MEASURING OBJECTS. #
              *EMPHMET
MMESTIM    I HAVE MY STUDENTS ESTIMATE THE SIZE OF REAL WORLD OBJECTS. #
              *EMPHMET
MMIDENT    I HAVE MY STUDENTS IDENTIFY OBJECTS WHOSE MEASUREMENT IS AS CLOSE
              AS POSSIBLE TO A GIVEN NUMBER OF UNITS. # *EMPHMET
MMDIFFU    I HAVE MY STUDENTS MEASURE A GIVEN OBJECT USING DIFFERENT UNITS
              OF MEASURE. # *EMPHMET
MMSMALU    I HAVE MY STUDENTS INCREASE THE PRECISION OF THEIR MEASUREMENTS
              BY BY MEANS OF SMALLER UNITS. # *EMPHMET
5          THE INTERPRETATIONS OF THE NUMBER PI GIVEN BELOW MAY BE INCLUDED
              IN YOUR INSTRUCTIONAL PROGRAM.
4          I HAD MY STUDENTS MEASURE AND FIND THE RATIO OF THE CIRCUMFERENCE
              TO THE DIAMETER OF A NUMBER OF CIRCULAR OBJECTS, AND
              APPROXIMATE C//D FOR ANY CIRCLE.
MMPCDE     *CIRCINT *EMPHEXP
MMPCDT     *TEXTINT
3          *REASINT
MMPCDK     *K
MMPCDS     *S
MMPCDU     *U
MMPCDL     *L
MMPCDR     *R
MMPCDF     *F
MMPCDH     *H
```

```
MMPCDX     *X
4          I TOLD MY STUDENTS THAT PI IS APPROXIMATELY EQUAL TO 22//7 OR
             3.14.
MMP227E    *CIRCINT *EMPHEXP
MMP227T    *TEXTINT
3          *REASINT
MMP227K    *K
MMP227S    *S
MMP227U    *U
MMP227L    *L
MMP227R    *R
MMP227F    *F
MMP227H    *H
MMP227X    *X
4          MY STUDENTS ESTIMATED THE VALUE OF PI USING BUFFON'S NEEDLE
             PROBLEM.
MMPBUFE    *CIRCINT *EMPHEXP
MMPBUFT    *TEXTINT
3          *REASINT
MMPBUFK    *K
MMPBUFS    *S
MMPBUFU    *U
MMPBUFL    *L
MMPBUFR    *R
MMPBUFF    *F
MMPBUFH    *H
MMPBUFX    *X
4          I PRESENTED A CHART RELATING THE VALUES OF THE CIRCUMFERENCE TO
             THAT OF THE DIAMETER OF VARIOUS CIRCLES LIKE THE FOLLOWING...
             # I ASKED THE STUDENTS TO FIND THE RATIO OF THE CIRCUMFERENCE
             TO THE DIAMETER FOR EACH CIRCLE AND GENERALIZED THAT C//2
             IS APPROXIMATELY EQUAL TO 3.14.
MMPCHRE    *CIRCINT *EMPHEXP
MMPCHRT    *TEXTINT
3          *REASINT
MMPCHRK    *K
MMPCHRS    *S
MMPCHRU    *U
MMPCHRL    *L
MMPCHRR    *R
MMPCHRF    *F
MMPCHRH    *H
MMPCHRX    *X
4          I TOLD MY STUDENTS THAT PI IS AN IRRATIONAL NUMBER WHICH EQUALS
             THE RATIO OF THE CIRCUMFERENCE OF ANY CIRCLE TO ITS DIAMETER.
MMPNUME    *CIRCINT *EMPHEXP
MMPNUMT    *TEXTINT
3          *REASINT
MMPNUMK    *K
MMPNUMS    *S
MMPNUMU    *U
MMPNUML    *L
MMPNUMR    *R
MMPNUMF    *F
MMPNUMH    *H
MMPNUMX    *X
4          I HAD MY STUDENTS USE REGULAR POLYGONS INSCRIBED IN A CIRCLE TO
             OBTAIN SUCCESSIVE APPROXIMATIONS OF PI. #
MMPPOLE    *CIRCINT *EMPHEXP
MMPPOLT    *TEXTINT
3          *REASINT
```

```
MMPPOLK    *K
MMPPOLS    *S
MMPPOLU    *U
MMPPOLL    *L
MMPPOLR    *R
MMPPOLF    *F
MMPPOLH    *H
MMPPOLX    *X
4          I INTRODUCED PI AS THE AREA OF A CIRCLE OF RADIUS 1. #
MMPONEE    *CIRCINT *EMPHEXP
MMPONET    *TEXTINT
3          *REASINT
MMPONEK    *K
MMPONES    *S
MMPONEU    *U
MMPONEL    *L
MMPONER    *R
MMPONEF    *F
MMPONEH    *H
MMPONEX    *X
5          SEVERAL METHODS FOR TEACHING THE FORMULA FOR THE AREA OF A
             PARALLELOGRAM ARE GIVEN BELOW.
4          I PRESENTED THE FORMULA A == B X H AND DEMONSTRATED HOW TO APPLY
             IT BY MEANS OF EXAMPLES. #
MMAFORE    *CIRCMET *EMPHEXP
MMAFORT    *TEXTINT
3          *REASINT
MMAFORK    *K
MMAFORS    *S
MMAFORU    *U
MMAFORL    *L
MMAFORR    *R
MMAFORF    *F
MMAFORH    *H
MMAFORX    *X
4          I PRESENTED A PARALLELOGRAM ON A GRID (OR A GEOBOARD),
             LIKE THE ONE BELOW, AND HAD
             THE STUDENTS RELATE THE NUMBER OF SQUARE UNITS INSIDE
             PARALLELOGRAM ABCD TO THE BASE AND ALTITUDE OF THE
             PARALLELOGRAM. #
MMAGBAE    *CIRCMET *EMPHEXP
MMAGBAT    *TEXTINT
3          *REASINT
MMAGBAK    *K
MMAGBAS    *S
MMAGBAU    *U
MMAGBAL    *L
MMAGBAR    *R
MMAGBAF    *F
MMAGBAH    *H
MMAGBAX    *X
4          I PRESENTED A PARALLELOGRAM ON A GRID (OR A GEOBOARD),
             LIKE THE ONE ABOVE, AND HAD
             THE STUDENTS COUNT THE SQUARE UNITS INSIDE TRIANGLES ABE AND
             CDF. THEN I HAD THEM RELATE THE AREA OF ABCD TO THAT OF
             RECTANGLE BECF BASED ON THE CONGRUENCE OF TRIANGLE ABE AND
             TRIANGLE BCF.
MMAGTRE    *CIRCMET *EMPHEXP
MMAGTRT    *TEXTINT
3          *REASINT
MMAGTRK    *K
```

```
MMAGTRS    *S
MMAGTRU    *U
MMAGTRL    *L
MMAGTRR    *R
MMAGTRF    *F
MMAGTRH    *H
MMAGTRX    *X
4          I DEVELOPED THE FORMULA A == B X H BY COMPARING THE AREA OF A
             PARALLELOGRAM TO THAT OF A RELATED RECTANGLE OF EQUAL
             DIMENSIONS.
MMARECE    *CIRCMET *EMPHEXP
MMARECT    *TEXTINT
3          *REASINT
MMARECK    *K
MMARECS    *S
MMARECU    *U
MMARECL    *L
MMARECR    *R
MMARECF    *F
MMARECH    *H
MMARECX    *X
4          I GAVE THE STUDENTS A PARALLELOGRAM LIKE THE ONE BELOW, AND ASKED
             THEM TO CUT OFF TRIANGLE FDC AND TO USE THIS TO FORM A
             RECTANGLE (AF'FD). THE STUDENTS THEN RELATED THE FORMULA FOR
             THE AREA OF THE RECTANGLE TO THE AREA OF THE PARALLELOGRAM. #
MMACUTE    *CIRCMET *EMPHEXP
MMACUTT    *TEXTINT
3          *REASINT
MMACUTK    *K
MMACUTS    *S
MMACUTU    *U
MMACUTL    *L
MMACUTR    *R
MMACUTF    *F
MMACUTH    *H
MMACUTX    *X
4          I PARTITIONED THE PARALLELOGRAM BY A DIAGONAL INTO TWO CONGRUENT
             TRIANGLES... # THEN THE AREA OF TRIANGLE ABD IS 1//2 BH AND
             THE AREA OF THE PARALLELOGRAM IS THEN 2(1//2 BH) OR BH.
MMACTRE    *CIRCMET *EMPHEXP
MMACTRT    *TEXTINT
3          *REASINT
MMACTRK    *K
MMACTRS    *S
MMACTRU    *U
MMACTRL    *L
MMACTRR    *R
MMACTRF    *F
MMACTRH    *H
MMACTRX    *X
4          I PARTITIONED THE PARALLELOGRAM ABCD INTO TRIANGLE ABD, TRIANGLE
             CDF AND RECTANGLE BFDE SO THAT THE AREA OF THE PARALLELOGRAM
             IS OBTAINED BY ADDING THE AREAS OF THE TWO TRIANGLES AND THE
             RECTANGLE. #
MMAPARE    *CIRCMET *EMPHEXP
MMAPART    *TEXTINT
3          *REASINT
MMAPARK    *K
MMAPARS    *S
MMAPARU    *U
MMAPARL    *L
```

```
MMAPARR    *R
MMAPARF    *F
MMAPARH    *H
MMAPARX    *X
4          I OBTAINED THE AREA OF THE PARALLELOGRAM BY SUBTRACTING THE AREAS
             OF TRIANGLE ABG AND TRIANGLE DCH FROM THE AREA OF THE
             RECTANGLE AGCH. #
MMASUBE    *CIRCMET *EMPHEXP
MMASUBT    *TEXTINT
3          *REASINT
MMASUBK    *K
MMASUBS    *S
MMASUBU    *U
MMASUBL    *L
MMASUBR    *R
MMASUBF    *F
MMASUBH    *H
MMASUBX    *X
5          SEVERAL METHODS FOR TEACHING THE FORMULA FOR THE VOLUME OF A
             RECTANGULAR PRISM ARE GIVEN BELOW. *CIRCMET
MMVPFOR    I PRESENTED THE FORMULA V == L X W X H OR V == (AREA OF BASE) X
             (HEIGHT) AND DEMONSTRATED HOW TO APPLY IT BY MEANS OF
             EXAMPLES. # *EMPHEXP
MMVPMOD    I PRESENTED A PHYSICAL MODEL OF A RIGHT PRISM (BOX) WITH ITS
             FACES MARKED OFF IN SQUARE UNITS. I HAD STUDENTS GENERATE THE
             FORMULA BY RELATING THE NUMBER OF CUBIC UNITS CONTAINED IN THE
             PRISM TO THE DIMENSIONS OF THE BOX, GIVING HINTS ONLY IF
             NECESSARY. # *EMPHEXP
MMVPBLD    I PROVIDED MY STUDENTS WITH UNIT CUBES AND ASKED THEM TO BUILD
             RECTANGULAR PRISMS OF SPECIFIED DIMENSIONS. I ASKED THEM TO
             RELATE THE NUMBER OF UNIT CUBES REQUIRED TO BUILD THE PRISMS
             TO THE GIVEN DIMENSIONS, GIVING HINTS ONLY IF NECESSARY.
             *EMPHEXP
5          SEVERAL TECHNIQUES A TEACHER MIGHT USE IN TEACHING THE
             RELATIONSHIPS AMONG VARIOUS METRIC (SI) UNITS ARE LISTED
             BELOW. *CIRCTEC
MMUNDEC    I ESTABLISHED THE ANALOGY BETWEEN DECIMAL NUMERATION SYSTEM AND
             THE BASIC METRIC UNITS OF MEASUREMENT. # *EMPHEXP
MMUNCHG    I TAUGHT MY STUDENTS RULES TO CHANGE FROM ONE METRIC UNIT TO
             ANOTHER. # *EMPHEXP
MMUNTAB    I PRESENTED A TABLE SHOWING DEFINITIONS AND ADJACENT
             RELATIONSHIPS BETWEEN UNITS. # *EMPHEXP
MMUNLIN    I USED A NUMBER LINE OR A METERSTICK (GRADUATED IN CENTIMETERS
             AND MILLIMETERS) TO ILLUSTRATE INTERRELATIONSHIPS AMONG UNITS.
             # *EMPHEXP
MMUNCUB    I USED CENTIMETER CUBES AND DECIMETER CUBES TO ESTABLISH
             RELATIONSHIPS AMONG UNITS. *EMPHEXP
MMUNINS    I DEMONSTRATED THE RELATIONSHIP BETWEEN METRIC UNITS OF LENGTH,
             METRIC UNITS OF CAPACITY AND METRIC UNITS OF MASS (WEIGHT). #
             *EMPHEXP
7          PART IV - TIME ALLOCATIONS.
MPSIZE     WHAT WAS THE AVERAGE LENGTH (IN MINUTES) OF EACH OF THE TARGET
             CLASS MATHEMATICS PERIODS?
MPTOTAL    HOW MANY TOTAL CLASS PERIODS DID YOU SPEND ON MEASUREMENT?
             (COMBINE PARTIAL PERIODS WHEN NECESSARY.)
5          *ACTTIME
2          ACTIVITIES RELATED TO...
MPCNCPT    THE CONCEPT OF MEASUREMENT (INCLUDING
             SELECTION OF UNITS AND USE OF UNIT TO ASSIGN A NUMBER).
MPMET      TEACHING UNITS IN THE METRIC SYSTEM (SI).
MPENG      TEACHING UNITS IN THE ENGLISH SYSTEM.
```

```
MPCONVW    CONVERSION OF UNITS WITHIN A SYSTEM. #
MPCONVB    CONVERSION OF UNITS BETWEEN SYSTEMS. #
MPESTIM    ESTIMATING MEASUREMENTS. #
MPPREC     DETERMINING PRECISION, ACCURACY, PERCENT
              ERROR AND RELATIVE ERROR.
MPOPER     OPERATIONS WITH MEASUREMENTS. #
MPPI       THE CONCEPT OF PI.
MPLINM     LINEAR MEASUREMENT. #
MPPPOLY    FINDING PERIMETERS OF POLYGONS (INCLUDING
              TRIANGLES, QUODRILATERALS, AND OTHER POLYGONS).
MPCCIRC    FINDING THE CIRCUMFERENCE OF CIRCLES.
MPATRI     FINDING THE AREA OF TRIANGLES.
MPARECT    FINDING THE AREA OF RECTANGLES (INCLUDING
              SQUARES).
MPAPARA    FINDING THE AREA OF PARALLELOGRAMS OTHER
              THAN RECTANGLES.
MPATRAP    FINDING THE AREA OF TRAPEZOIDS.
MPACIRC    FINDING THE AREA OF CIRCLES.
MPSRECT    FINDING THE SURFACE AREA OF RECTANGULAR
              SOLIDS (INCLUDING CUBES).
MPSCYLN    FINDING THE SURFACE AREA OF CYLINDERS.
MPSSPH     FINDING THE SURFACE AREA OF SPHERES.
MPVRECT    FINDING THE VOLUMES OF RECTANGULAR SOLIDS
              (INCLUDING CUBES).
MPVCYLN    FINDING THE VOLUME OF CYLINDERS AND PRISMS.
MPVSPH     FINDING THE VOLUME OF SPHERES.
MPVCONE    FINDING THE VOLUME OF CONES AND PYRAMIDS.
2
MPAPPL     APPLICATION//PROBLEM SOLVING ACTIVITIES RELATED TO
              MEASUREMENT (TEXTBOOK WORD
              PROBLEMS, PROBLEMS RELATED TO REAL WORLD SITUATIONS, RECREATIONAL
              PROBLEMS, CHALLENGING PROBLEMS, ETC.).
7          PART V - OPINIONS. INDICATE (CIRCLE) THE EXTENT TO WHICH YOU
              AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS
              RELATIVE TO YOUR TARGET CLASS.
MOESTIM    ESTIMATION AND APPROXIMATION SHOULD BE EMPHASIZED IN THE TEACHING
              OF MEASUREMENT. *AGGDIS
MOINSTR    STUDENTS' USE OF STANDARD INSTRUMENTS FOR MEASURING SHOULD BE
              EMPHASIZED IN THE MATHEMATICS PROGRAM. *AGGDIS
MOOTHER    MEASUREMENTS OTHER THAN LENGTH, AREA, OR VOLUME SHOULD BE TAUGHT
              AS PART OF THE SCHOOL SCIENCE PROGRAM AND NOT AS A PART OF THE
              SCHOOL MATHEMATICS PROGRAM. *AGGDIS
MONSU      WORK WITH NON-STANDARD UNITS IS ESSENTIAL FOR INCREASING
              STUDENTS' UNDERSTANDING OF THE CONCEPT OF MEASUREMENT. *AGGDIS
MOTTMW     MEASUREMENT OF TIME, TEMPERATURE, MASS, AND WEIGHT SHOULD BE
              TAUGHT AS PART OF THE MATHEMATICS PROGRAM AT THIS GRADE LEVEL.
              *AGGDIS
MOEMPF     WORK WITH FORMULAS FOR FINDING THE PERIMETER, AREA, AND VOLUME OF
              COMMON GEOMETRIC SHAPES SHOULD BE EMPHASIZED. *AGGDIS
MOCALC     COMPUTATIONS INVOLVING STANDARD UNITS SHOULD BE DONE WITH
              HAND-HELD CALCULATORS. *AGGDIS
MOACTM     THE BEST WAY STUDENTS LEARN ABOUT MEASUREMENT IS BY ACTUALLY
              MEASURING THINGS. *AGGDIS
MOEXPF     STUDENTS SHOULD BE EXPECTED TO KNOW AND APPLY STANDARD AREA AND
              VOLUME FORMULAS. *AGGDIS
...............................................................................
.          TEACHER CLASSROOM PROCESSES TOPIC SPECIFIC QUESTIONNAIRE           .
.                             GEOMETRY                                        .
...............................................................................
9          TEACHER CLASSROOM PROCESSES QUESTIONNAIRE - GEOMETRY ...
              CHECK HERE IF GEOMETRY IS NOT INCLUDED IN YOUR PROGRAM FOR THE
```

```
                TARGET CLASS. DISREGARD THE REMAINDER OF THE QUESTIONNAIRE AND
                RETURN IT.
7               CIRCLE THE RESPONSE WHICH BEST DESCRIBES THE USE YOU MADE OF EACH
                OF THE FOLLOWING MATERIALS IN YOUR INSTRUCTION ON GEOMETRY.
GSTEXT          STUDENT TEXTBOOK (CONTAINING EXPLANATIONS AND EXERCISES). *SOURCE
GSOTEXT         OTHER PUBLISHED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
                WORKSHEETS). *SOURCE
GSLOCAL         LOCALLY PRODUCED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
                WORKSHEETS). *SOURCE
GSINDIV         COMMERCIALLY OR LOCALLY PRODUCED INDIVIDUALIZED MATERIALS (E.G.,
                PROGRAMMED INSTRUCTION OR COMPUTER ASSISTED INSTRUCTION).
                *SOURCE
GSFILM          COMMERCIALLY OR LOCALLY PRODUCED FILMS, FILMSTRIPS, OR TEACHER
                DEMONSTRATION MODELS. *SOURCE
GSLAB           COMMERCIALLY OR LOCALLY PRODUCED LABORATORY MATERIALS FOR STUDENT
                USE (E.G., GAMES OR MANIPULATIVES). *SOURCE
7               PART I - TEACHING TOPICS. THE TOPICS GIVEN BELOW MAY BE INCLUDED
                IN YOUR INSTRUCTIONAL PROGRAM. CIRCLE THE APPROPRIATE REPONSE
                CODE TO SHOW WHETHER FOR STUDENTS IN THE TARGET CLASS THE
                TOPIC WAS...
GTANGLE         ANGLES (ACUTE, RIGHT, SUPPLEMENTARY, ETC.). *TAUGHT
GTTRANS         TRANSFORMATIONS (TRANSLATIONS, ROTATIONS, REFLECTIONS). *TAUGHT
GTVEC           VECTORS. *TAUGHT
GTPYTH          THE PYTHAGOREAN THEOREM. *TAUGHT
GTTRI           TRIANGLES AND THEIR PROPERTIES (EXCLUDING CONGRUENT TRIANGLES).
                *TAUGHT
GTPOLY          POLYGONS AND THEIR PROPERTIES (EXCLUDING PROPERTIES RELATED TO
                CONGRUENT OR SIMILAR POLYGONS). *TAUGHT
GTCIRC          CIRCLES AND THEIR PROPERTIES. *TAUGHT
GTCNG           CONGRUENCE OF GEOMETRIC FIGURES (INCLUDING CONGRUENT TRIANGLES).
                *TAUGHT
GTSIM           SIMILARITY OF GEOMETRIC FIGURES (INCLUDING SIMILAR TRIANGLES).
                *TAUGHT
GTPLINE         PARALLEL LINES. *TAUGHT
GTSREL          SPATIAL RELATIONS. *TAUGHT
GTSOLID         GEOMETRIC SOLIDS AND THEIR PROPERTIES. *TAUGHT
GTRC            GEOMETRIC CONSTRUCTIONS WITH RULER AND COMPASS. *TAUGHT
GTPROOF         PROOFS (FORMAL DEDUCTIVE DEMONSTRATIONS). *TAUGHT
GTTESS          TESSELLATIONS. *TAUGHT
GTCOOR          COORDINATE GEOMETRY. *TAUGHT
7               PART II - INSTRUCTIONAL APPROACHES. SEVERAL APPROACHES TO
                TEACHING GEOMETRY ARE GIVEN BELOW. CIRCLE THE APPROPRIATE
                RESPONSE CODE TO SHOW WHETHER FOR STUDENTS IN THE TARGET CLASS
                THE APPROACH WAS...
*EMPHGEO        /1 EMPHASIZED (USED AS A PRIMARY MEANS OF DEVELOPING GEOMETRIC
                CONTENT, USED EXTENSIVELY OR FREQUENTLY)=EMPHASIZED
                /2 USED, BUT NOT EMPHASIZED=USED NOT EMPHSZD
                /3 NOT USED
GIAEUCI         AN INFORMAL EUCLIDEAN APPROACH BASED ON INDUCTIVE REASONING,
                MEASUREMENT, OR STUDENTS' INTUITION. *EMPHGEO
GIAEUCF         A FORMAL EUCLIDEAN APPROACH BASED ON AN AXIOMATIC SYSTEM USED TO
                PROVE THEOREMS. *EMPHGEO
GIATRNI         AN INFORMAL TRANSFORMATIONAL APPROACH BASED ON INDUCTIVE
                REASONING OR STUDENTS' INTUITIONS. *EMPHGEO
GIATRNF         A FORMAL TRANSFORMATIONAL APPROACH BASED ON AN AXIOMATIC SYSTEM
                USED TO PROVE THEOREMS. *EMPHGEO
GIACOOR         A COORDINATE APPROACH (EITHER INFORMAL OR FORMAL) USING
                COORDINATES OF POINTS, EQUATIONS, ETC. *EMPHGEO
GIAVEC          A VECTOR APPROACH (EITHER INFORMAL OR FORMAL) USING ADDITION OF
                ORDERED PAIRS, A SCALAR TIMES AN ORDERED PAIR, ETC. *EMPHGEO
7               PART III - INSTRUCTIONAL AIDS. SEVERAL AIDS WHICH MIGHT BE USED
```

```
                 IN TEACHING GEOMETRY ARE GIVEN BELOW. CIRCLE THE APPROPRIATE
                 RESPONSE CODE TO INDICATE THE DEGREE TO WHICH YOU AND THE
                 STUDENTS IN THE TARGET CLASS USED EACH AID.
GAIDRUL     RULER AND COMPASS. *USAGE
GAIDPRO     PROTRACTOR. *USAGE
GAIDSSQ     SET SQUARES (DRAFTMAN'S TRIANGLES). *USAGE
GAIDGEO     GEOBOARDS. *USAGE
GAIDCUT     PAPER CUTOUTS OR PATTERNS. *USAGE
GAIDMOD     MODELS OF SOLIDS (CONES, PYRAMIDS, CYLINDERS, ETC.). *USAGE
GAIDFLD     PAPER FOLDING. *USAGE
GAIDTP      TRACING PAPER. *USAGE
GAIDGP      GRAPH PAPER. *USAGE
GAIDMIR     MIRRORS OR TRANSLUCENT REFLECTORS. *USAGE
GAIDFLM     FILMSTRIPS AND FILMS. *USAGE
GAIDCGR     COMPUTER GRAPHICS. *USAGE
GAIDKIT     KITS FOR CONSTRUCTING PLANE OR SOLID FIGURES. *USAGE
7           PART IV - TEACHING METHODS.
5           SEVERAL INTERPRETATIONS OF
                 TRANSLATIONS ARE GIVEN BELOW. *CIRCINT
GMTRINF     I USED AN INFORMAL APPROACH WITHOUT A FORMAL DEFINITION OF
                 TRANSLATIONS. *EMPHINT
GMTRVEC     I DEFINED THE VECTOR AB AS THE SET OF EQUIVALENT PAIRS OF
                 POINTS... # THEN THE TRANSLATION ALONG THE VECTOR V WAS
                 DEFINED AS THE MAP OF THE PLANE P ONTO P WHICH ASSOCIATES TO
                 EACH POINT M A POINT N SUCH THAT VECTOR MN == VECTOR V (OR
                 (M,N) IS AN ELEMENT OF VECTOR V). *EMPHINT
GMTRPAR     GIVEN (A,B) A PAIR OF POINTS ON THE PLANE P, I DEFINED A
                 TRANSLATION ASSOCIATED WITH THE PAIR AS THE MAP OF P ONTO
                 ITSELF WHICH MAKES EACH POINT M CORRESPOND TO A POINT N SUCH
                 THAT ABNM IS A PARALLELOGRAM. *EMPHINT
GMTRSYM     I DEFINED A TRANSLATION AS THE COMPOSITION OF TWO CENTRAL
                 SYMMETRIES. *EMPHINT
GMTRXY      A TRANSLATION OF THE PLANE P WAS DEFINED AS THE MAP # WHICH
                 ASSOCIATES TO EACH POINT M WITH COORDINATES (A,B) A POINT M'
                 WITH COORDINATES (A',B') SUCH THAT X'==X+A AND Y'==Y+B.
                 *EMPHINT
GMTRBIJ     I PRESENTED THE AXIOMS OF INCIDENCE AND DEFINED THE TRANSLATION
                 ON THE PLANE P AS A BIJECTION OF P SATISFYING THE FOLLOWING
                 AXIOMS... # *EMPHINT
5           SEVERAL INTERPRETATIONS OF VECTORS ARE GIVEN BELOW. *CIRCINT
GMIVINF     I USED AN INFORMAL APPROACH WITHOUT A FORMAL DEFINITION OF
                 VECTORS. *EMPHINT
GMIVAB      AFTER CHOOSING THE AXES, THE VECTOR T ASSOCIATED WITH THE
                 TRANSLATION TAU(A,B) IS DEFINED AS THE PAIR (A,B). ADDITION OF
                 VECTORS IS THEN DEFINED IN TERMS OF THE COMPOSITION OF
                 TRANSLATIONS. *EMPHINT
GMIVMMU     A VECTOR T IS DEFINED AS THE SET OF PAIRS (M, TAU(M)) WHERE M IS
                 A POINT AND TAU IS A GIVEN TRANSLATION. *EMPHINT
GMIVEQT     A VECTOR IS DEFINED AS AN EQUIVALENCE CLASS OF PAIRS OF POINTS.
                 THE PAIRS VECTOR AB AND VECTOR MN ARE EQUIVALENT IF THERE
                 EXISTS A TRANSLATION THAT TRANSFORMS A INTO B AND M INTO N.
                 *EMPHINT
GMIVODL     A VECTOR AB IS DEFINED BY ITS ORIENTATION (THAT OF LINE AB), ITS
                 DIRECTION (FROM A TO B), AND ITS LENGTH (THE DISTANCE FROM A
                 TO B) *EMPHINT
GMIVEQM     A VECTOR IS DEFINED AS AN EQUIVALENCE CLASS OF PAIRS OF POINTS.
                 THE PAIRS VECTOR AB AND VECTOR MN ARE EQUIVALENT IF AND ONLY
                 IF SEGMENT AN AND SEGMENT BM HAVE THE SAME MIDPOINT. *EMPHINT
5           SEVERAL METHODS FOR TEACHING THAT THE SUM OF THE MEASURES OF THE
                 ANGLES OF A TRIANGLE IS 180 DEGREES ARE GIVEN BELOW.
4           MY STUDENTS MEASURED THE ANGLES OF A TRIANGLE AND ADDED THE
```

```
              MEASURES TO DISCOVER THAT THE SUM OF THE MEASURE IS 180
              DEGREES.
GMHDISE    *CIRCMET *EMPHMEX
GMHDIST    *TEXTMET
3          *REASMET
GMHDISK    *K
GMHDISS    *S
GMHDISU    *U
GMHDISL    *L
GMHDISR    *R
GMHDISF    *F
GMHDISH    *H
GMHDISX    *X
4          I DREW A LINE THROUGH A VERTEX PARALLEL TO THE OPPOSITE SIDE AND
              USED ALTERNATE INTERIOR ANGLES TO SHOW THAT THE SUM OF THE
              ANGLES OF A TRIANGLE IS 180 DEGREES. #
GMHLINE    *CIRCMET *EMPHMEX
GMHLINT    *TEXTMET
3          *REASMET
GMHLINK    *K
GMHLINS    *S
GMHLINU    *U
GMHLINL    *L
GMHLINR    *R
GMHLINF    *F
GMHLINH    *H
GMHLINX    *X
4          MY STUDENTS CUT THE ANGLES OFF A TRIANGLE AND ARRANGED THEM ON A
              STRAIGHT LINE. #
GMHCUTE    *CIRCMET *EMPHMEX
GMHCUTT    *TEXTMET
3          *REASMET
GMHCUTK    *K
GMHCUTS    *S
GMHCUTU    *U
GMHCUTL    *L
GMHCUTR    *R
GMHCUTF    *F
GMHCUTH    *H
GMHCUTX    *X
4          I TOLD MY STUDENTS THAT THE SUM OF THE MEASURES OF THE ANGLES OF
              A TRIANGLE IS 180 DEGREES AND HAD THEM VERIFY IT BY MEASURING
              THE ANGLES AND ADDING THE MEASURES.
GMHMSRE    *CIRCMET *EMPHMEX
GMHMSRT    *TEXTMET
3          *REASMET
GMHMSRK    *K
GMHMSRS    *S
GMHMSRU    *U
GMHMSRL    *L
GMHMSRR    *R
GMHMSRF    *F
GMHMSRH    *H
GMHMSRX    *X
4          I HAD MY STUDENTS VERIFY THE RELATIONSHIP BY PAPER FOLDING. #
GMHFLDE    *CIRCMET *EMPHMEX
GMHFLDT    *TEXTMET
3          *REASMET
GMHFLDK    *K
GMHFLDS    *S
GMHFLDU    *U
```

```
GMHFLDL    *L
GMHFLDR    *R
GMHFLDF    *F
GMHFLDH    *H
GMHFLDX    *X
4          I USED THE FACT THAT (AS ILLUSTRATED IN THE FIGURE)
              IN TRAVELLING A TO B, B TO C, C TO A, A
              COMPLETE REVOLUTION (360 DEGREES) IS SWEPT. #
GMHTRVE    *CIRCMET *EMPHMEX
GMHTRVT    *TEXTMET
3          *REASMET
GMHTRVK    *K
GMHTRVS    *S
GMHTRVU    *U
GMHTRVL    *L
GMHTRVR    *R
GMHTRVF    *F
GMHTRVH    *H
GMHTRVX    *X
4          USING TESSELLATIONS, PERHAPS FROM THE REAL WORLD, I IDENTIFIED
              THREE ANGLES AT A POINT (C) CONGRUENT WITH THREE ANGLES IN A
              TRIANGLE (ABC) EMBEDDED IN THE TESSELLATION. #
GMHTESE    *CIRCMET *EMPHMEX
GMHTEST    *TEXTMET
3          *REASMET
GMHTESK    *K
GMHTESS    *S
GMHTESU    *U
GMHTESL    *L
GMHTESR    *R
GMHTESF    *F
GMHTESH    *H
GMHTESX    *X
4          A RULER AND COMPASS CONSTRUCTION WAS USED TO SHOW THE
              RELATIONSHIP. #
GMHRCE     *CIRCMET *EMPHMEX
GMHRCT     *TEXTMET
3          *REASMET
GMHRCK     *K
GMHRCS     *S
GMHRCU     *U
GMHRCL     *L
GMHRCR     *R
GMHRCF     *F
GMHRCH     *H
GMHRCX     *X
5          SEVERAL METHODS FOR TEACHING THE PYTHAGOREAN THEOREM ARE GIVEN
              BELOW.
4          I PRESENTED MY STUDENTS WITH A VARIETY OF RIGHT TRIANGLES AND HAD
              THEM MEASURE AND RECORD THE LENGTHS OF THE LEGS AND
              HYPOTENUSE. THE PATTERN WAS DISCUSSED AND THEN WE STATED THE
              PROPERTY. #
GMPMSRE    *CIRCMET *EMPHMEX
GMPMSRT    *TEXTMET
3          *REASMET
GMPMSRK    *K
GMPMSRS    *S
GMPMSRU    *U
GMPMSRL    *L
GMPMSRR    *R
GMPMSRF    *F
```

```
GMPMSRH    *H
GMPMSRX    *X
4          I USED DIAGRAMS LIKE THE FOLLOWING TO SHOW THAT, IN A RIGHT
              TRIANGLE, A SQUARED + B SQUARED = C SQUARED. #
GMPDGME    *CIRCMET *EMPHMEX
GMPDGMT    *TEXTMET
3          *REASMET
GMPDGMK    *K
GMPDGMS    *S
GMPDGMU    *U
GMPDGML    *L
GMPDGMR    *R
GMPDGMF    *F
GMPDGMH    *H
GMPDGMX    *X
4          I GAVE MY STUDENTS THE FORMULA A SQUARED + B SQUARED = C SQUARED
              AND HAD THEM USE IT IN WORKING EXAMPLES. #
GMPFRME    *CIRCMET *EMPHMEX
GMPFRMT    *TEXTMET
3          *REASMET
GMPFRMK    *K
GMPFRMS    *S
GMPFRMU    *U
GMPFRML    *L
GMPFRMR    *R
GMPFRMF    *F
GMPFRMH    *H
GMPFRMX    *X
4          THE THEOREM WAS PRESENTED IN A HISTORICAL CONTEXT (E.G., ACCOUNT
              OF PYTHAGORAS AND EUCLID).
GMPHISE    *CIRCMET *EMPHMEX
GMPHIST    *TEXTMET
3          *REASMET
GMPHISK    *K
GMPHISS    *S
GMPHISU    *U
GMPHISL    *L
GMPHISR    *R
GMPHISF    *F
GMPHISH    *H
GMPHISX    *X
4          I PRESENTED AN INFORMAL AREA ARGUMENT USING PHYSICAL MODELS
              (E.G., GEOBOARDS, OR PICTORAL MODELS). #
GMPPHYE    *CIRCMET *EMPHMEX
GMPPHYT    *TEXTMET
3          *REASMET
GMPPHYK    *K
GMPPHYS    *S
GMPPHYU    *U
GMPPHYL    *L
GMPPHYR    *R
GMPPHYF    *F
GMPPHYH    *H
GMPPHYX    *X
4          I PRESENTED A FORMAL DEDUCTIVE 'ALGEBRAIC' ARGUMENT. #
GMPDALE    *CIRCMET *EMPHMEX
GMPDALT    *TEXTMET
3          *REASMET
GMPDALK    *K
GMPDALS    *S
GMPDALU    *U
```

```
GMPDALL    *L
GMPDALR    *R
GMPDALF    *F
GMPDALH    *H
GMPDALX    *X
4          I PRESENTED A FORMAL DEDUCTIVE ARGUMENT USING AREA. #
GMPDARE    *CIRCMET *EMPHMEX
GMPDART    *TEXTMET
3          *REASMET
GMPDARK    *K
GMPDARS    *S
GMPDARU    *U
GMPDARL    *L
GMPDARR    *R
GMPDARF    *F
GMPDARH    *H
GMPDARX    *X
5          TECHNIQUES FOR TEACHING CONGRUENT TRIANGLES. SEVERAL TECHNIQUES
             FOR TEACHING CONGRUENT TRIANGLES ARE GIVEN BELOW. *CIRCTEC
GMCTDEF    STATE DEFINITION AND PROPERTIES. # *USAGE
GMCTPAP    GRAPH PAPER OR TRACING PAPER. # *USAGE
GMCTMSR    MEASUREMENT. # *USAGE
GMCTRC     CONSTRUCTIONS WITH RULERS AND COMPASS. # *USAGE
GMCTGEO    GEOBOARD. # *USAGE
GMCTENV    ENVIRONMENT. # *USAGE
GMCTTRN    TRANSFORMATIONS. # *USAGE
5          TECHNIQUES FOR TEACHING SIMILAR TRIANGLES.  SEVERAL TECHNIQUES
             FOR TEACHING SIMILAR TRIANGLES ARE GIVEN BELOW.  *CIRCTEC
GMSTDEF    STATE DEFINITION AND PROPERTIES. # *USAGE
GMSTPAP    GRAPH PAPER OR TRACING PAPER. # *USAGE
GMSTMSR    MEASUREMENT. # *USAGE
GMSTRC     CONSTRUCTIONS WITH RULER AND COMPASS. # *USAGE
GMSTGEO    GEOBOARD. # *USAGE
GMSTENV    ENVIRONMENT. # *USAGE
GMSTDIL    DILATIONS (STRETCHING OR SHRINKING). # *USAGE
5          TECHNIQUES FOR TEACHING PARALLEL LINES. SEVERAL TECHNIQUES FOR
             TEACHING PARALLEL LINES ARE GIVEN BELOW. *CIRCTEC
GMLLDEF    DEFINITION AND EXAMPLES. # *USAGE
GMLLFLD    PAPER FOLDING. # *USAGE
GMLLMSR    MEASUREMENT. # *USAGE
GMLLRC     CONSTRUCTIONS WITH RULER AND COMPASS. # *USAGE
GMLLTES    TESSELLATIONS. # *USAGE
GMLLGEO    GEOBOARDS. # *USAGE
GMLLSSQ    CONSTRUCTION WITH STRAIGHTEDGE AND SET SQUARES
             (DRAFTSMAN'S TRIANGLES). # *USAGE
GMLLENV    ENVIRONMENT. # *USAGE
GMLLTRN    TRANSLATIONS. # *USAGE
GMLLREF    REFLECTIONS. # *USAGE
GMLLROT    ROTATIONS. # *USAGE
5          TEACHING SPATIAL RELATIONS. SEVERAL TECHNIQUES FOR TEACHING
             SPATIAL RELATIONS ARE GIVEN BELOW. *CIRCTEC
GMSRPAT    USING READY-MADE TWO-DIMENSIONAL PATTERNS (NETS) TO BUILD THREE
             DIMENSIONAL FIGURES. # *USAGE
GMSRDGN    DESIGNING A TWO-DIMENSIONAL PATTERN FOR A GIVEN THREE-DIMENSIONAL
             OBJECT. # *USAGE
GMSRDRW    MAKING A TWO-DIMENSIONAL DRAWING FOR A GIVEN THREE-DIMENSIONAL
             OBJECT. # *USAGE
GMSRPLN    DRAWING PLANS AND ELEVATIONS (ORTHOGONAL PROJECTIONS) OF
             GEOMETRIC SOLIDS. # *USAGE
GMSRINT    REPRESENTING THE INTERSECTION OF A PLANE AND A SOLID BY A
             TWO-DIMENSIONAL DRAWING. # *USAGE
```

```
GMSRALG    FINDING NUMERICAL OR ALGEBRAIC EXPRESSIONS THAT DESCRIBE
              RELATIONSHIPS AMONG THE PARTS OF A GEOMETRIC FIGURE. # *USAGE
GMSRBLD    BUILDING MODELS OF INTERSECTING PLANES IN SPACE. *USAGE
GMSRSHD    PREDICTING THE SHAPE OF THE SHADOWS CAST BY VARIOUS OBJECTS UNDER
              A FIXED SOURCE OF LIGHT. *USAGE
7          PART V - TIME ALLOCATIONS.
GPSIZE     WHAT WAS THE AVERAGE LENGTH (IN MINUTES) OF EACH OF THE TARGET
              CLASS MATHEMATICS PERIODS?
GPTOTAL    HOW MANY TOTAL CLASS PERIODS DID YOU SPEND ON GEOMETRY? (COMBINE
              PARTIAL PERIODS WHEN NECESSARY).
5          *ACTTIME
2          ACTIVITIES RELATED TO...
GPANGLE    THE DEVELOPMENT OF THE CONCEPT OF ANGLES (ACUTE, RIGHT,
              SUPPLEMENTARY, ETC.).
GPTRANS    TRANSFORMATIONS (TRANSLATIONS, ROTATIONS, REFLECTIONS).
GPVEC      VECTORS.
GPPYTH     THE PYTHAGOREAN THEOREM.
GPTRI      TRIANGLES AND THEIR PROPERTIES (EXCLUDING CONGRUENT TRIANGLES).
GPPOLY     POLYGONS AND THEIR PROPERTIES (EXCLUDING PROPERTIES RELATED TO
              CONGRUENT OR SIMILAR POLYGONS).
GPCIRC     CIRCLES AND THEIR PROPERTIES.
GPCNG      CONGRUENCE OF GEOMETRIC FIGURES (INCLUDING CONGRUENT TRIANGLES).
GPSIM      SIMILARITY OF GEOMETRIC FIGURES (INCLUDING SIMILAR TRIANGLES).
GPPLINE    PARALLEL LINES.
GPSREL     SPATIAL RELATIONS.
GPSOLID    GEOMETRIC SOLIDS AND THEIR PROPERTIES.
GPRC       GEOMETRIC CONSTRUCTIONS WITH RULER AND COMPASS.
GPPROOF    PROOFS (FORMAL DEDUCTIVE DEMONSTRATIONS).
GPTESS     TESSELLATIONS.
GPCOOR     COORDINATE GEOMETRY.
2
GPAPPL     APPLICATIONS//PROBLEM SOLVING ACTIVITIES RELATED TO
              GEOMETRY (TEXTBOOK WORD
              PROBLEMS, PROBLEMS RELATED TO REAL WORLD SITUATIONS, RECREATIONAL
              PROBLEMS, CHALLENGING PROBLEMS, ETC.).
7          PART VI - OPINIONS. INDICATE (CIRCLE) THE EXTENT TO WHICH YOU
              AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS
              RELATIVE TO YOUR TARGET CLASS.
GOMREAL    THE MAIN OBJECTIVE OF TEACHING GEOMETRY AT THIS GRADE LEVEL IS
              THAT OF CONSTRUCTING A MATHEMATICAL MODEL OF REAL SITUATIONS.
              *AGGDIS
GODEDUC    MASTERY OF DEDUCTIVE PROCEDURES (E.G., PROVING THEOREMS) IS THE
              GOAL OF TEACHING GEOMETRY AT THIS GRADE LEVEL. *AGGDIS
GOFDEMO    THE OBJECTIVE OF TEACHING GEOMETRY AT THIS GRADE LEVEL IS TO
              PRESENT THE STUDENT WITH SITUATIONS IN WHICH HE HAS TO
              FORMALLY DEMONSTRATE SOMETHING ABOUT WHICH HE HAS AN INTUITUVE
              NOTION. *AGGDIS
GOAXIOM    IT IS DESIRABLE THAT THE PRESENTATION OF GEOMETRIC CONCEPTS
              FOLLOW AN ORDER DETERMINED BY AN AXIOMATIC APPROACH. *AGGDIS
GOINTU     AN INTUITIVE APPROACH TO GEOMETRY IS MORE MEANINGFUL TO STUDENTS
              AT THIS GRADE LEVEL THAN A FORMAL APPROACH. *AGGDIS
GOTRANS    GEOMETRY SHOULD BE TAUGHT MAINLY THROUGH TRANSFORMATIONS (FLIPS,
              TURNS, STRETCHES). *AGGDIS
GOAIDS     THE USE OF CONCRETE MODELS AND INSTRUCTIONAL AIDS IS ESSENTIAL IN
              TEACHING GEOMETRY. *AGGDIS
GOTHRD     THREE DIMENSIONAL GEOMETRY SHOULD BE TAUGHT ONLY IN THE CONTEXT
              OF MEASUREMENT (VOLUME, SURFACE AREA, ETC.) FOR THESE
              STUDENTS. *AGGDIS
GOCPTTR    THE CONCEPT OF TRANSLATION SHOULD BE PART OF THE KNOWLEDGE OF
              STUDENTS AT THIS GRADE LEVEL. *AGGDIS
GOCPTVC    THE CONCEPT OF VECTOR SHOULD BE PART OF THE KNOWLEDGE OF STUDENTS
```

```
                AT THIS GRADE LEVEL. *AGGDIS
GODELVC   IT IS PREFERABLE TO DELAY THE STUDY OF VECTORS TO A LATER TIME.
                *AGGDIS
GOVISUL   ACTIVITIES TO IMPROVE STUDENTS' ABILITY TO VISUALIZE SPATIAL
                FIGURES SHOULD BE INCLUDED IN THE INSTRUCTIONAL PROGRAM.
                *AGGDIS
GOPOLY    THE STUDY OF POLYGONS AND THEIR PROPERTIES SHOULD BE LIMITED ONLY
                TO TRIANGLES AND QUADRILATERALS. *AGGDIS
GORC      THE STUDENTS SHOULD BE SKILLED IN GEOMETRIC CONSTRUCTIONS USING
                RULER (OR STRAIGHTEDGE) AND COMPASS. *AGGDIS
GOPROOF   DEMONSTRATION OF PROOFS OF THEOREMS BY THE TEACHER SHOULD BE AN
                ESSENTIAL PART OF AN INSTRUCTIONAL PROGRAM IN GEOMETRY FOR
                THESE STUDENTS. *AGGDIS
GOHEDUC   GEOMETRIC TOPICS SHOULD BE TAUGHT ONLY TO THOSE STUDENTS WHO WILL
                PURSUE HIGHER EDUCATION. *AGGDIS
GODELPF   PROOF OF THEOREMS SHOULD BE DELAYED UNTIL THESE STUDENTS ARE AT
                LEAST 15 YEARS OF AGE. *AGGDIS
...................................................................................
.         TEACHER CLASSROOM PROCESSES TOPIC SPECIFIC QUESTIONNAIRE        .
.               ALGEBRA (INTEGERS, FORMULAS, AND EQUATIONS)               .
...................................................................................
9         TEACHER CLASSROOM PROCESSES QUESTIONNAIRE - ALGEBRA (INTEGERS,
                FORMULAS AND EQUATIONS). ...
          CHECK HERE IF NONE OF INTEGERS (POSITIVE AND NEGATIVE WHOLE
                NUMBERS), FORMULAS OR EQUATIONS ARE INCLUDED IN YOUR PROGRAM
                FOR THE TARGET CLASS. DISREGARD THE REMAINDER OF THE
                QUESTIONNAIRE AND RETURN IT.
7         CIRCLE THE RESPONSE WHICH BEST DESCRIBES THE USE YOU MADE OF EACH
                OF THE FOLLOWING MATERIALS IN YOUR INSTRUCTION ON
                INTEGERS, FORMULAS, AND EQUATIONS.
ASTEXT    STUDENT TEXTBOOK (CONTAINING EXPLANATIONS AND EXERCISES). *SOURCE
ASOTEXT   OTHER PUBLISHED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
                WORKSHEETS). *SOURCE
ASLOCAL   LOCALLY PRODUCED TEXT MATERIALS (E.G., TEXTBOOKS, WORKBOOKS, OR
                WORKSHEETS). *SOURCE
ASINDIV   COMMERCIALLY OR LOCALLY PRODUCED INDIVIDUALIZED MATERIALS (E.G.,
                PROGRAMMED INSTRUCTION OR COMPUTER ASSISTED INSTRUCTION).
                *SOURCE
ASFILM    COMMERCIALLY OR LOCALLY PRODUCED FILMS, FILMSTRIPS, OR TEACHER
                DEMONSTRATION MODELS. *SOURCE
ASLAB     COMMERCIALLY OR LOCALLY PRODUCED LABORATORY MATERIALS FOR STUDENT
                USE (E.G., GAMES OR MANIPULATIVES). *SOURCE
7         PART I - TEACHING TOPICS. THE TOPICS GIVEN BELOW MAY
                BE INCLUDED IN YOUR INSTRUCTIONAL PROGRAM. CIRCLE THE
                APPROPRIATE RESPONSE CODE TO SHOW WHETHER FOR STUDENTS IN THE
                TARGET CLASS THE TOPIC WAS...
5         INTEGERS.
ATIPN     THE CONCEPT OF POSITIVE AND NEGATIVE INTEGERS. *TAUGHT
ATIADD    ADDITION OF INTEGERS (POSITIVE AND NEGATIVE). *TAUGHT
ATISUB    SUBTRACTION OF INTEGERS (POSITIVE AND NEGATIVE). *TAUGHT
ATIMUL    MULTIPLICATION OF INTEGERS (POSITIVE AND NEGATIVE). *TAUGHT
ATIDIV    DIVISION OF INTEGERS (POSITIVE AND NEGATIVE). *TAUGHT
ATISTRC   STRUCTURAL PROPERTIES OF THE SET OF INTEGERS (E.G.,
                COMMUTATIVITY, ASSOCIATIVITY, DISTRIBUTIVITY, ETC.). *TAUGHT
ATIORD    ORDER RELATIONS IN THE SET OF INTEGERS. *TAUGHT
5         FORMULAS AND EQUATIONS.
ATEEVAL   EVALUATIONS OF FORMULAS FOR GIVEN VALUES OF THE VARIABLES. #
                 *TAUGHT
ATEDERV   DERIVING FORMULAS OR EQUATIONS. # *TAUGHT
ATESLIT   SOLVING LITERAL EQUATIONS. # *TAUGHT
ATESLIN   SOLVING LINEAR EQUATIONS. # *TAUGHT
```

```
7          PART II - TEACHING METHODS.
5          THE INTERPRETATIONS OF INTEGERS GIVEN
             BELOW MAY BE INCLUDED IN YOUR INSTRUCTIONAL PROGRAM.
4          EXTENDING THE NUMBER RAY TO THE NUMBER LINE. #
AMIRAYE    *CIRCINT *EMPHEXP
AMIRAYT    *TEXTINT
3          *REASINT
AMIRAYK    *K
AMIRAYS    *S
AMIRAYU    *U
AMIRAYL    *L
AMIRAYR    *R
AMIRAYF    *F
AMIRAYH    *H
AMIRAYX    *X
4          PRESENTING INTEGERS AS SOLUTIONS TO EQUATIONS. #
AMISOLE    *CIRCINT *EMPHEXP
AMISOLT    *TEXTINT
3          *REASINT
AMISOLK    *K
AMISOLS    *S
AMISOLU    *U
AMISOLL    *L
AMISOLR    *R
AMISOLF    *F
AMISOLH    *H
AMISOLX    *X
4          USING VECTORS OR DIRECTED SEGMENTS ON THE NUMBER LINE. #
AMIVECE    *CIRCINT *EMPHEXP
AMIVECT    *TEXTINT
3          *REASINT
AMIVECK    *K
AMIVECS    *S
AMIVECU    *U
AMIVECL    *L
AMIVECR    *R
AMIVECF    *F
AMIVECH    *H
AMIVECX    *X
4          DEFINING INTEGERS AS EQUIVALENCE CLASSES OF
             WHOLE NUMBERS. #
AMICLSE    *CIRCINT *EMPHEXP
AMICLST    *TEXTINT
3          *REASINT
AMICLSK    *K
AMICLSS    *S
AMICLSU    *U
AMICLSL    *L
AMICLSR    *R
AMICLSF    *F
AMICLSH    *H
AMICLSX    *X
4          USING EXAMPLES OF PHYSICAL SITUATIONS. #
AMIPHYE    *CIRCINT *EMPHEXP
AMIPHYT    *TEXTINT
3          *REASINT
AMIPHYK    *K
AMIPHYS    *S
AMIPHYU    *U
AMIPHYL    *L
AMIPHYR    *R
```

```
AMIPHYF    *F
AMIPHYH    *H
AMIPHYX    *X
5          THE PROCEDURES GIVEN BELOW DEAL WITH THE TOPIC OF ADDITION OF
              INTEGERS.
4          ADDITION BY NUMBER LINE. #
AMALINE    *CIRCPRO *EMPHEXP
AMALINT    *TEXTPRO
3          *REASPRO
AMALINK    *K
AMALINS    *S
AMALINU    *U
AMALINL    *L
AMALINR    *R
AMALINF    *F
AMALINH    *H
AMALINX    *X
4          ADDITION BY RULES. #
AMARULE    *CIRCPRO *EMPHEXP
AMARULT    *TEXTPRO
3          *REASPRO
AMARULK    *K
AMARULS    *S
AMARULU    *U
AMARULL    *L
AMARULR    *R
AMARULF    *F
AMARULH    *H
AMARULX    *X
4          USE OF PHYSICAL SITUATIONS. #
AMAPHYE    *CIRCPRO *EMPHEXP
AMAPHYT    *TEXTPRO
3          *REASPRO
AMAPHYK    *K
AMAPHYS    *S
AMAPHYU    *U
AMAPHYL    *L
AMAPHYR    *R
AMAPHYF    *F
AMAPHYH    *H
AMAPHYX    *X
5          THE PROCEDURES GIVEN BELOW DEAL WITH THE TOPIC OF SUBTRACTION OF
              INTEGERS.
4          SUBTRACTION AS ADDITION OF OPPOSITES ON THE NUMBER LINE. #
AMSLINE    *CIRCPRO *EMPHEXP
AMSLINT    *TEXTPRO
3          *REASPRO
AMSLINK    *K
AMSLINS    *S
AMSLINU    *U
AMSLINL    *L
AMSLINR    *R
AMSLINF    *F
AMSLINH    *H
AMSLINX    *X
4          SUBTRACTION AS INVERSE OF ADDITION. #
AMSINVE    *CIRCPRO *EMPHEXP
AMSINVT    *TEXTPRO
3          *REASPRO
AMSINVK    *K
AMSINVS    *S
```

```
AMSINVU    *U
AMSINVL    *L
AMSINVR    *R
AMSINVF    *F
AMSINVH    *H
AMSINVX    *X
4          SUBTRACTION BY RULES. #
AMSRULE    *CIRCPRO *EMPHEXP
AMSRULT    *TEXTPRO
3          *REASPRO
AMSRULK    *K
AMSRULS    *S
AMSRULU    *U
AMSRULL    *L
AMSRULR    *R
AMSRULF    *F
AMSRULH    *H
AMSRULX    *X
4          SUBTRACTION AS A NUMBER OF UNITS. #
AMSUNSE    *CIRCPRO *EMPHEXP
AMSUNST    *TEXTPRO
3          *REASPRO
AMSUNSK    *K
AMSUNSS    *S
AMSUNSU    *U
AMSUNSL    *L
AMSUNSR    *R
AMSUNSF    *F
AMSUNSH    *H
AMSUNSX    *X
4          SUBTRACTION AS 'WHAT MUST BE ADDED'. #
AMSADDE    *CIRCPRO *EMPHEXP
AMSADDT    *TEXTPRO
3          *REASPRO
AMSADDK    *K
AMSADDS    *S
AMSADDU    *U
AMSADDL    *L
AMSADDR    *R
AMSADDF    *F
AMSADDH    *H
AMSADDX    *X
5          THE FOLLOWING STATEMENTS DESCRIBE METHODS BY WHICH A TEACHER
             MIGHT DEVELOP THE CONCEPT OF THE PRODUCT OF INTEGERS.
             CIRCLE THE APPROPRIATE RESPONSE CODE TO INDICATE THE
             EXTENT TO WHICH THAT METHOD OF DEVELOPING THE CONCEPT
             WAS USED WITH THE TARGET CLASS.
*EMPHDEV   /1 EMPHASIZED (USED AS A PRIMARY METHOD OF DEVELOPMENT,
             REFERRED TO EXTENSIVELY OR FREQUENTLY) =EMPHASIZED
             /2 USED, BUT NOT EMPHASIZED =USED NOT EMPHSZD
             /3 NOT USED
AMPADD     DEVELOPMENT BY USE OF REPEATED ADDITION. # *EMPHDEV
AMPEXT     DEVELOPMENT BY THE EXTENSION OF PROPERTIES OF THE WHOLE NUMBER
             SYSTEM. # *EMPHDEV
AMPPHY     DEVELOPMENT BY USE OF PHYSICAL SITUATIONS. # *EMPHDEV
AMPPAT     DEVELOPMENT BY USE OF PATTERNS. # *EMPHDEV
AMPRUL     NO DEVELOPMENT--STUDENTS WERE GIVEN RULES. # *EMPHDEV
5          THE PROCEDURES GIVEN BELOW DEAL WITH METHODS FOR SOLVING LINEAR
             EQUATIONS.
4          USING PROPERTIES OF EQUALITY WITH OPERATIONS WITH NUMBERS. #
AMEEQUE    *CIRCMET *EMPHEXP
```

```
AMEEQUT    *TEXTPRO
3          *REASPRO
AMEEQUK    *K
AMEEQUS    *S
AMEEQUU    *U
AMEEQUL    *L
AMEEQUR    *R
AMEEQUF    *F
AMEEQUH    *H
AMEEQUX    *X
4          USING INVERSE OPERATIONS WITH NUMBERS. #
AMEINVE    *CIRCMET *EMPHEXP
AMEINVT    *TEXTPRO
3          *REASPRO
AMEINVK    *K
AMEINVS    *S
AMEINVU    *U
AMEINVL    *L
AMEINVR    *R
AMEINVF    *F
AMEINVH    *H
AMEINVX    *X
4          USING ARITHMETICAL REASONING. #
AMEARTE    *CIRCMET *EMPHEXP
AMEARTT    *TEXTPRO
3          *REASPRO
AMEARTK    *K
AMEARTS    *S
AMEARTU    *U
AMEARTL    *L
AMEARTR    *R
AMEARTF    *F
AMEARTH    *H
AMEARTX    *X
4          USING TRIAL AND ERROR. #
AMETAEE    *CIRCMET *EMPHEXP
AMETAET    *TEXTPRO
3          *REASPRO
AMETAEK    *K
AMETAES    *S
AMETAEU    *U
AMETAEL    *L
AMETAER    *R
AMETAEF    *F
AMETAEH    *H
AMETAEX    *X
4          USING RULES. #
AMERULE    *CIRCMET *EMPHEXP
AMERULT    *TEXTPRO
3          *REASPRO
AMERULK    *K
AMERULS    *S
AMERULU    *U
AMERULL    *L
AMERULR    *R
AMERULF    *F
AMERULH    *H
AMERULX    *X
5          TEACHING TECHNIQUES. THE FOLLOWING STATEMENTS DESCRIBE TECHNIQUES
             A TEACHER MIGHT USE IN TEACHING FORMULAS. *CIRCTEC
AMFTERM    PRESENTING FORMULAS AND EXPLAINING THE MEANING OF THE TERMS IN
```

```
                 THE FORMULAS. # *EMPHTEC
AMFGRPH    HAVING THE STUDENTS INSPECT GRAPHS AND FIND FORMULAS THAT EXPRESS
                 THE RELATIONSHIPS PORTRAYED BY THE GRAPH. # *EMPHTEC
AMFDDEV    PROVIDING DATA FROM WHICH FORMULAS OR EQUATIONS ARE DEVELOPED. #
                 *EMPHTEC
AMFDCOL    HAVING STUDENTS COLLECT DATA ON RELATED VARIABLES AND FORMULATE
                 THE RELATIONSHIP BETWEEN THE VARIABLES. # *EMPHTEC
AMFNEWF    HAVING STUDENTS CREATE NEW FORMULAS BASED ON KNOWN, SIMPLER
                 FORMULAS. # *EMPHTEC
7          PART III - APPLICATIONS AND PROBLEMS.
5          SEVERAL TYPES OF PROBLEMS
                 ARE LISTED BELOW WHICH MAY HAVE BEEN INCLUDED IN YOUR
                 INSTRUCTIONAL PROGRAM. CIRCLE THE APPROPRIATE RESPONSE CODE
                 TO INDICATE THE DEGREE TO WHICH A PARTICULAR TYPE OF PROBLEM
                 WAS STUDIED BY THE TARGET CLASS.
*EMPHTYP   /1 EMPHASIZED (USED AS A PRIMARY TYPE OF PROBLEM, USED
                 EXTENSIVELY OR FREQUENTLY) =EMPHASIZED
                 /2 USED, BUT NOT EMPHASIZED =USED NOT EMPHSZD
                 /3 NOT USED
AAAGE      AGE PROBLEMS. # *EMPHTYP
AADIGIT    DIGIT PROBLEMS. # *EMPHTYP
AAMIX      MIXTURE PROBLEMS. # *EMPHTYP
AAPCT      PERCENT PROBLEMS. # *EMPHTYP
AADRT      DISTANCE-RATE-TIME PROBLEMS. # *EMPHTYP
AAINST     INTEREST PROBLEMS. # *EMPHTYP
AAAREAV    AREA-VOLUME PROBLEMS # *EMPHTYP
AAPHY      PHYSICAL-NATURAL SCIENCE PROBLEMS (LEVER PROBLEMS,
                 HOOKE'S LAW, ETC.). # *EMPHTYP
AAENRGY    ENERGY OR ECOLOGICAL PROBLEMS. # *EMPHTYP
5          SOURCES OF APPLICATIONS AND PROBLEMS. SEVERAL SOURCES OF
                 APPLICATIONS//PROBLEMS OF INTEGERS, FORMULAS, AND EQUATIONS
                 ARE LISTED BELOW. *CIRCSRC
AUTEXT     STUDENTS' TEXTBOOKS. *USEDSRC
AUSTEXT    SUPPLEMENTARY TEXTBOOKS OR WORKBOOKS. *USEDSRC
AULOCAL    WORKSHEETS OR EXERCISES DESIGNED BY MYSELF OR LOCAL TEACHERS.
                 *USEDSRC
AUGUIDE    THE CURRICULUM GUIDE OR SYLLABUS. *USEDSRC
AUPPUB     PUBLICATIONS BY PROFESSIONAL ASSOCIATIONS. *USEDSRC
AUSTDS     APPLICATIONS OR PROBLEMS SUGGESTED BY MY STUDENTS. *USEDSRC
AUREALW    APPLICATIONS OR PROBLEMS FROM REAL WORLD SOURCES SUCH AS
                 NEWSPAPERS OR INDIVIDUALS INVOLVED IN THE USE OF MATHEMATICS.
                 *USEDSRC
7          PART IV TIME ALLOCATIONS.
APSIZE     WHAT WAS THE AVERAGE LENGTH (IN MINUTES) OF EACH OF THE TARGET
                 CLASS MATHEMATICS PERIODS?
5          INTEGERS
APITOT     HOW MANY TOTAL CLASS PERIODS DID YOU SPEND ON THE DEVELOPMENT OF
                 THE INTEGERS AND OPERATIONS WITH INTEGERS? (COMBINE PARTIAL
                 PERIODS WHEN NECESSARY.)
3          *ACTTIME
2          ACTIVITIES RELATED TO...
APIPN      THE DEVELOPMENT OF THE CONCEPT OF POSITIVE AND NEGATIVE INTEGERS.
APIADD     THE ADDITION OF INTEGERS (POSITIVE AND NEGATIVE).
APISUB     THE SUBTRACTION OF INTEGERS (POSITIVE AND NEGATIVE).
APIMUL     THE MULTIPLICATION OF INTEGERS (POSITIVE AND NEGATIVE).
APIDIV     THE DIVISION OF INTEGERS (POSITIVE AND NEGATIVE).
APISTRC    THE STRUCTURAL PROPERTIES OF THE SET OF INTEGERS (COMMUTATIVITY,
                 ASSOCIATIVITY, DISTRIBUTIVITY, ETC.).
APIORD     ORDER RELATIONS WITH THE SET OF INTEGERS.
2
APIAPPL    APPLICATION//PROBLEM SOLVING ACTIVITIES RELATED TO
```

```
                   INTEGERS (TEXTBOOK
                   WORD PROBLEMS, PROBLEMS RELATED TO REAL WORLD SITUATIONS,
                   RECREATIONAL PROBLEMS, CHALLENGING PROBLEMS, ETC.).
5         FORMULAS AND EQUATIONS
APETOT    HOW MANY TOTAL CLASS PERIODS DID YOU SPEND ON TEACHING FORMULAS
                   AND EQUATIONS? (COMBINE PARTIAL PERIODS WHEN NECESSARY.)
3         *ACTTIME
2         ACTIVITIES RELATED TO...
APEEVAL   EVLUATION OF FORMULAS (FOR GIVEN VALUES OF THE VARIABLES).
APEDERV   DERIVING FORMULAS OR EQUATIONS (WHERE DATA IS DERIVED FROM
                   EXPERIMENTS OR GIVEN TO STUDENTS).
2
APEAPPF   APPLICATION//PROBLEM SOLVING ACTIVITIES RELATED TO
                   USE OF FORMULAS (TEXTBOOK WORD PROBLEMS,
                   PROBLEMS RELATED TO REAL WORLD SITUATIONS, RECREATIONAL
                   PROBLEMS, CHALLENGING PROBLEMS, ETC.).
2         ACTIVITIES RELATED TO...
APESLIT   SOLVING LITERAL EQUATIONS.
APESLIN   SOLVING LINEAR EQUATIONS.
2
APEAPPE   APPLICATION//PROBLEM SOLVING ACTIVITIES RELATED TO
                   USE OF EQUATIONS (TEXTBOOK
                   WORD PROBLEMS, PROBLEMS RELATED TO REAL WORLD PROBLEMS,
                   RECREATIONAL PROBLEMS, CHALLENGING PROBLEMS, ETC.).
7         PART V - OPINIONS. INDICATE (CIRCLE) THE EXTENT TO WHICH YOU
                   AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS
                   RELATIVE TO YOUR TARGET CLASS.
AOILINE   THE USE OF THE NUMBER LINE ADDS A LOT TO THE TEACHING OF
                   INTEGERS. *AGGDIS
AOIRULE   IT IS VERY IMPORTANT TO JUSTIFY THE RULES FOR MULTIPLYING
                   INTEGERS. *AGGDIS
AODNUMS   A GREAT DEAL OF PRACTICE IS REQUIRED IN ORDER FOR STUDENTS TO
                   ACQUIRE COMPETENCE IN PERFORMING OPERATIONS WITH DIRECTED
                   NUMBERS. *AGGDIS
AOILAWS   IT IS IMPORTANT FOR STUDENTS TO UNDERSTAND HOW INTEGERS OBEY
                   GENERAL LAWS LIKE THE DISTRIBUTIVE LAW, THE ASSOCIATIVE LAW,
                   ETC. *AGGDIS
AOIWHY    AVERAGE STUDENTS ARE USUALLY NOT SATISFIED WITH KNOWING ONLY THE
                   RULES FOR PERFORMING OPERATIONS WITH INTEGERS; THEY WANT TO
                   KNOW WHY THE RULES WORK. *AGGDIS
AOISTRC   MOST STUDENTS FIND IT DIFFICULT TO APPRECIATE THE SIGNIFICANCE OF
                   STUDYING THE STRUCTURAL PROPERTIES (ADDITIVE INVERSE, ORDER
                   RELATION, DISTRIBUTIVE LAW, ETC.) OF THE SET OF INTEGERS.
                   *AGGDIS
AOLETTR   MOST STUDENTS CANNOT BE EXPECTED TO MASTER THE USE OF LETTERS FOR
                   UNKNOWNS QUICKLY; THEY HAVE TO BECOME ACCUSTOMED TO THIS USAGE
                   SLOWLY OVER A LONG PERIOD OF TIME. *AGGDIS
AOSOLUT   LINEAR EQUATIONS WHOSE SOLUTION IS A FRACTION (LIKE 5X - 2 == 1)
                   ARE GENERALLY MORE DIFFICULT FOR STUDENTS TO SOLVE THAN LINEAR
                   EQUATIONS WHOSE SOLUTION IS AN INTEGER (LIKE 6X - 3 == 15).
                   *AGGDIS
AOESTEP   IN SOLVING EQUATIONS, IT IS IMPORTANT THAT STUDENTS BE ABLE TO
                   JUSTIFY EACH STEP IN THEIR SOLUTION PROCEDURE. *AGGDIS
AOETAE    SOLVING LINEAR EQUATIONS BY TRIAL AND ERROR HELPS STUDENTS
                   UNDERSTAND THE MEANING OF A SOLUTION. *AGGDIS
AOSSET    THE NOTION 'SOLUTION SET' (THOSE VALUES OF THE UNKNOWN WHICH MAKE
                   THE RELATION TRUE) AIDS THE STUDENTS' COMPREHENSION OF LINEAR
                   EQUATIONS. *AGGDIS
AOEWP     AVERAGE STUDENTS HAVE DIFFICULTY IN SOLVING WORD PROBLEMS
                   INVOLVING LINEAR EQUATIONS. *AGGDIS
AOTRANS   AVERAGE STUDENTS HAVE DIFFICULTY IN TRANSLATING VERBAL AND
```

```
                WRITTEN SENTENCES INTO MATHEMATICAL SENTENCES, AND VICE VERSA.
                *AGGDIS
AOEAPPL    AVERAGE STUDENTS HAVE DIFFICULTY WITH APPLICATIONS INVOLVING
                LINEAR EQUATIONS. *AGGDIS
AOPTYPE    WHEN SOLVING PROBLEMS, IT IS IMPORTANT FOR STUDENTS TO FIRST
                IDENTIFY THE TYPE OF PROBLEM (AGE, DIGIT, MIXTURE, ETC.) BEING
                SOLVED. *AGGDIS
AOEJUST    SOLVING EQUATIONS REQUIRING STUDENTS TO JUSTIFY THE STEPS IN THE
                SOLUTION PROCEDURE HAS A DETRIMENTAL EFFECT ON LEARNING HOW TO
                SOLVE EQUATIONS. *AGGDIS
AOEQIVE    THE NOTION OF EQUIVALENT EQUATIONS IS USEFUL IN HELPING STUDENTS
                UNDERSTAND SOLUTIONS. *AGGDIS
AOFMEM     FORMULAS TAUGHT SHOULD BE MEMORIZED BY STUDENTS. *AGGDIS
AOFORSP    FORMULAS SHOULD BE USED MAINLY TO AID STUDENTS IN SOLVING CLASSES
                OF STORY PROBLEMS. *AGGDIS
AOFORGF    FORMULAS SHOULD BE USED MAINLY TO FIND VOLUMES, AREAS, AND
                PERIMETERS OF GEOMETRIC FIGURES. *AGGDIS
AOFORPR    FORMULAS SHOULD BE USED MAINLY IN APPLICATIONS TO PRACTICAL
                SITUATIONS. *AGGDIS
..........................................................................
.          TEACHER GENERAL CLASSROOM PROCESS QUESTIONNAIRE                 .
..........................................................................
9          TEACHER GENERAL CLASSROOM PROCESS QUESTIONNAIRE.
7          IN TEACHING THE TARGET CLASS THIS YEAR, HOW MUCH EMPHASIS ARE YOU
                GIVING TO EACH OF THE FOLLOWING OBJECTIVES...
*RELEMPH   /1 RELATIVELY MORE EMPHASIS THAN MOST OF THE OBJECTIVES LISTED
                =RELATIVELY MORE
                /2 ABOUT EQUAL EMPHASIS TO MOST OF THE OBJECTIVES LISTED
                =ABOUT EQUAL
                /3 RELATIVELY LESS EMPHASIS THAN MOST OF THE OBJECTIVES LISTED
                =RELATIVELY LESS
COBJLOG    UNDERSTAND THE LOGICAL STRUCTURE OF MATHEMATICS. *RELEMPH
COBJPRF    UNDERSTAND THE NATURE OF PROOF. *RELEMPH
COBJINT    BECOME INTERESTED IN MATHEMATICS. *RELEMPH
COBJKNW    KNOW MATHEMATICAL FACTS, PRINCIPLES AND ALGORITHMS. *RELEMPH
COBJINQ    DEVELOP AN ATTITUDE OF INQUIRY. *RELEMPH
COBJLIF    DEVELOP AN AWARENESS OF THE IMPORTANCE OF MATHEMATICS IN EVERYDAY
                LIFE. *RELEMPH
COBJCOM    PERFORM COMPUTATIONS WITH SPEED AND ACCURACY. *RELEMPH
COBJSCI    DEVELOP AN AWARENESS OF THE IMPORTANCE OF MATHEMATICS IN THE
                BASIC AND APPLIED SCIENCES. *RELEMPH
COBJSYS    DEVELOP A SYSTEMATIC APPROACH TO SOLVING PROBLEMS. *RELEMPH
7          THE FOLLOWING GRID LISTS SOURCES OF INFORMATION THAT MIGHT BE
                USED IN MAKING CERTAIN TEACHING DECISIONS. PLEASE INDICATE HOW
                OFTEN, IN PREPARING FOR THE TARGET CLASS, YOU USED EACH SOURCE
                TO MAKE A PARTICULAR TYPE OF DECISION.
*SRCUSE    /0 NEVER USED
                /1 OCCASIONALLY USED=OCCSNLLY USED
                /2 FREQUENTLY USED
*G         DECIDING GOALS AND WHAT TOPICS TO TEACH.
*P         DECIDING HOW TO PRESENT A TOPIC.
*D         SELECTING DRILL AND PRACTICE EXERCISES.
*A         SELECTING PROBLEMS (E.G., APPLICATIONS) WHICH GO BEYOND DRILL AND
                PRACTICE.
5          TEXTBOOK(S) USED BY STUDENTS IN THE TARGET CLASS.
CSITXTG    *G *SRCUSE
CSITXTP    *P *SRCUSE
CSITXTD    *D *SRCUSE
CSITXTA    *A *SRCUSE
5          SYLLABUS OR CURRICULUM GUIDE (OTHER THAN MINIMAL COMPETENCY
                STATEMENTS).
```

```
CSISYLG    *G *SRCUSE
CSISYLP    *P *SRCUSE
CSISYLD    *D *SRCUSE
CSISYLA    *A *SRCUSE
5          STATEMENTS OF MINIMAL COMPETENCIES.
CSIMING    *G *SRCUSE
CSIMINP    *P *SRCUSE
CSIMIND    *D *SRCUSE
CSIMINA    *A *SRCUSE
5          EXTERNAL EXAMINATIONS (TESTS OTHER THAN THOSE YOU GIVE AS PART OF
              THE COURSE).
CSIEXTG    *G *SRCUSE
CSIEXTP    *P *SRCUSE
CSIEXTD    *D *SRCUSE
CSIEXTA    *A *SRCUSE
5          JOURNALS, BOOKS (INCLUDING TEXTBOOKS NOT USED BY YOUR STUDENTS)
              AND OTHER PUBLISHED MATERIALS.
CSIJRNG    *G *SRCUSE
CSIJRNP    *P *SRCUSE
CSIJRND    *D *SRCUSE
CSIJRNA    *A *SRCUSE
5          MATERIALS PREVIOUSLY PREPARED BY YOURSELF.
CSISLFG    *G *SRCUSE
CSISLFP    *P *SRCUSE
CSISLFD    *D *SRCUSE
CSISLFA    *A *SRCUSE
5          MATERIALS OR ADVICE FROM OTHER TEACHERS.
CSIOTHG    *G *SRCUSE
CSIOTHP    *P *SRCUSE
CSIOTHD    *D *SRCUSE
CSIOTHA    *A *SRCUSE
5          PROFESSIONAL MEETINGS, IN-SERVICE WORKSHOPS, ETC.
CSIPROG    *G *SRCUSE
CSIPROP    *P *SRCUSE
CSIPROD    *D *SRCUSE
CSIPROA    *A *SRCUSE
7          HOW DIFFICULT WOULD IT BE FOR YOU TO TEACH THE TARGET CLASS
              SATISFACTORILY UNDER EACH OF THE FOLLOWING
              CIRCUMSTANCES. CIRCLE THE APPROPRIATE NUMBER AS FOLLOWS FOR
              RESOURCES YOU USE (*OR*) FOR RESOURCES YOU DO NOT NOW USE.
*DOWO      /1 VERY EASY
           /2 FAIRLY EASY
           /3 FAIRLY DIFFICULT
           /4 VERY DIFFICULT
           /0 NOT APPLICABLE (I DO WITHOUT THIS RESOURCE NOW)=NOW DO
           WITHOUT
CDWVPUB    DOING WITHOUT PUBLISHED VISUALS (SLIDES, TRANSPARENCIES, OR
              POSTERS). *DOWO
CDWVSLF    DOING WITHOUT VISUALS (SLIDES, TRANSPARENCIES, OR POSTERS) THAT
              YOU HAVE MADE YOURSELF. *DOWO
CDWPSLF    DOING WITHOUT PROBLEM SETS YOU HAVE WRITTEN YOURSELF. *DOWO
CDWTPUB    DOING WITHOUT PUBLISHED TESTS. *DOWO
CDWADVA    DOING WITHOUT THE ADVICE YOU HAVE RECEIVED IN THE PAST YEAR FROM
              ADMINISTRATORS (E.G., PRINCIPAL, CURRICULUM SUPERVISOR,
              DEPARTMENT HEAD). *DOWO
CDWTSLF    DOING WITHOUT TESTS YOU HAVE WRITTEN YOURSELF. *DOWO
CDWTEXT    DOING WITHOUT PUBLISHED TEXTBOOKS (CONTAINING BOTH EXPLANATIONS
              AND EXERCISES). *DOWO
CDWWBK     DOING WITHOUT PUBLISHED WORKBOOKS OR PUBLISHED PROBLEM SETS
              (CONTAINING EXERCISES ONLY). *DOWO
CDWEXP     DOING WITHOUT EXAMPLES TO TALK ABOUT THAT YOU HAVE MADE UP
```

```
                YOURSELF. *DOWO
CDWSYL    DOING WITHOUT THE OFFICIAL SYLLABUS. *DOWO
CDWMEMM    DOING WITHOUT WHAT YOU REMEMBER FROM MATHEMATICS COURSES YOU HAVE
                TAKEN. *DOWO
CDWMEME    DOING WITHOUT WHAT YOU REMEMBER FROM EDUCATION COURSES YOU HAVE
                TAKEN. *DOWO
CDWADVT    DOING WITHOUT THE ADVICE YOU HAVE RECEIVED IN THE PAST YEAR FROM
                OTHER TEACHERS. *DOWO
CDWEXAM    DOING WITHOUT KNOWLEDGE OF WHAT IS ON EXTERNAL EXAMS (NOT
                SELECTED BY YOU) TAKEN BY YOUR STUDENTS. *DOWO
7         ESTIMATE THE PERCENT OF TARGET CLASS TIME IN A TYPICAL WEEK
                DEVOTED TO EACH OF THE FOLLOWING...
CGRPWHL    WHOLE CLASS WORKING TOGETHER AS A SINGLE GROUP (E.G., WHOLE CLASS
                LECTURE OR WHOLE CLASS DISCUSSION).
CGRPSMA    SMALL GROUP INSTRUCTION (OR SOME COMBINATION OF SMALL GROUPS AND
                STUDENTS WORKING INDIVIDUALLY).
CGRPIND    ALL STUDENTS WORKING INDIVIDUALLY (WITH OR WITHOUT INDIVIDUAL
                HELP FROM TEACHER OR TEACHER AIDE).
CGRPOTH    OTHER (PLEASE SPECIFY).
7         WHICH OF THE FOLLOWING SITUATIONS OCCUR REGULARLY IN YOUR SMALL
                GROUP INSTRUCTION WITH THE TARGET CLASS (CHECK AS MANY AS
                APPLY). (*FOR THE FOLLOWING ITEMS, WHEN IT IS INDICATED THAT
                NONE OF THE SITUATIONS OCCURS REGULARLY, THEN THE THREE ITEMS
                ARE CODED '3'. WHEN IT IS INDICATED THAT SMALL GROUP
                INSTRUCTION IS NOT USED, THEN THE THREE ITEMS ARE CODED '9'.*)
*CHECKSG  /1 YES
          /1 NO
          /3 NONE OF THE ABOVE OCCURS REGULARLY =NONE REGULARLY
          /9 (*NO RESPONSE OR*) NO SMALL GROUP INSTRUCTION, SO QUESTION
          DOES NOT ARISE =NO RSPS NOT APPL
CSGMAB    MOST ABLE STUDENTS WORK SEPARATELY WHILE REST OF THE CLASS WORKS
                AS A SINGLE GROUP. *CHECKSG
CSGLAB    LEAST ABLE STUDENTS WORK SEPARATELY WHILE REST OF THE CLASS WORK
                AS A SINGLE GROUP. *CHECKSG
CSGMANY    THE CLASS IS SPLIT INTO THREE OR MORE GROUPS, EACH AT A DIFFERENT
                ABILITY LEVEL. *CHECKSG
7
CPACING    WHICH OF THE FOLLOWING STATEMENTS BEST DESCRIBES YOUR TARGET
                CLASS? (CHECK ONE)
          /1 TO THE EXTENT POSSIBLE, I TEACH ALL STUDENTS THE SAME
          CONTENT AT THE SAME PACE =SAME CNTNT PACE
          /2 TO THE EXTENT POSSIBLE, I TEACH ALL STUDENTS THE SAME
          CONTENT, BUT LET THEM PROCEED AT THEIR OWN PACE =VARY PACE
          /3 TO THE EXTENT POSSIBLE, I VARY THE CONTENT ACROSS STUDENTS
          OR GROUPS OF STUDENTS =VARY CONTENT
CDASSGN    WHICH OF THE FOLLOWING STATEMENTS IS MOST CHARACTERISTIC OF YOUR
                TARGET CLASS? (CHECK ONE)
          /1 ALL STUDENTS ARE ASSIGNED THE SAME SET OF EXERCISES OR
          PROBLEMS FOR COMPLETION THE SAME DAY =SAME
          /2 ALL STUDENTS ARE ASSIGNED THE SAME SET OF EXERCISES OR
          PROBLEMS BUT DATE OF COMPLETION VARIES FROM STUDENT TO STUDENT
          =VARY DATE CMPLTN
          /3 SOME STUDENTS ARE ASSIGNED EXERCISES OR PROBLEMS THAT YOU
          WOULD NOT EXPECT OTHER STUDENTS IN THE CLASS TO DO =VARY
          EXERCISES
7         TO SHOW HOW THE EXERCISES OR PROBLEMS ASSIGNED SOME STUDENTS
                DIFFER FROM THOSE ASSIGNED TO OTHER STUDENTS IN THE TARGET
                CLASS, CHECK THOSE STATEMENTS WHICH ARE TYPICAL OF YOUR CLASS.
                (*FOR THE FOLLOWING ITEMS, WHEN IT IS INDICATED THAT ALL
                STUDENTS ARE ASSIGNED THE SAME SET OF EXERCISES, THEN THE
                THREE ITEMS ARE CODED '9'.*)
```

```
*CHECKEX  /1 YES
          /2 NO
          /9 (*NO RESPONSE OR*) NOT APPLICABLE (ALL STUDENTS ARE ASSIGNED
          THE SAME SET OF EXERCISES OR PROBLEMS) =NO RSPS NOT APPL
CHDMORE   SOME STUDENTS ARE ASSIGNED MORE EXERCISES OR PROBLEMS THAN OTHER
          STUDENTS. *CHECKEX
CHDHARD   SOME STUDENTS ARE ASSIGNED MORE DIFFICULT EXERCISES OR PROBLEMS
          THAN OTHER STUDENTS. *CHECKEX
CHDTOP    SOME STUDENTS ARE ASSIGNED EXERCISES OR PROBLEMS ON TOPICS WHICH
          OTHER STUDENTS ARE NOT EXPECTED TO COVER THIS YEAR. *CHECKEX
7         THE FOLLOWING ARE REASONS THAT TEACHERS MIGHT GIVE FOR STUDENTS
          NOT MAKING SATISFACTORY PROGRESS IN MATHEMATICS. CHECK THE
          APPROPRIATE COLUMN TO INDICATE HOW IMPORTANT EACH OF THE
          FOLLOWING IS IN ACCOUNTING FOR STUDENTS WHO ARE NOT MAKING
          SATISFACTORY PROGRESS IN YOUR TARGET CLASS. (IF ALL STUDENTS
          IN THE TARGET CLASS ARE MAKING COMPLETELY SATISFACTORY
          PROGRESS, CHECK HERE AND SKIP TO THE NEXT QUESTION.) (*IN THIS
          CASE, ALL THESE ITEMS ARE CODED '9'.*)
*PROGRES  /1 A VERY IMPORTANT REASON =VERY IMPORTANT
          /2 A SOMEWHAT IMPORTANT REASON =SOMEWHAT IMPRTNT
          /3 NOT AN IMPORTANT REASON =NOT IMPORTANT
          /9 (*NO REPONSE OR*) NOT APPLICABLE =NO RSPS NOT APPL
CPGABIL   STUDENT LACK OF ABILITY. *PROGRES
CPGMISB   STUDENT MISBEHAVIOUR. *PROGRES
CPGINDF   STUDENT INDIFFERENCE OR LACK OF MOTIVATION (BUT NOT
          MISBEHAVIOUR). *PROGRES
CPGFEAR   DEBILITATING FEAR OF MATHEMATICS. *PROGRES
CPGABS    STUDENT ABSENTEEISM. *PROGRES
CPGTIME   INSUFFICIENT SCHOOL TIME ALLOCATED TO MATHEMATICS. *PROGRES
CPGPROF   INSUFFICIENT PROFICIENCY ON YOUR PART IN DEALING WITH STUDENTS
          HAVING THE KINDS OF DIFFICULTIES FOUND IN THE TARGET CLASS.
          *PROGRES
CPGLIM    LIMITED RESOURCES AND MATERIALS. *PROGRES
CPGMANY   TOO MANY STUDENTS. *PROGRES
CPGOTH    OTHER (PLEASE SPECIFY). *PROGRES
7
CFEAR     HOW MANY STUDENTS IN THE TARGET CLASS DO YOU BELIEVE ARE
          ESPECIALLY FEARFUL OR ANXIOUS ABOUT MATHEMATICS?
          /0 NONE
          /1 ONE TO THREE
          /2 FOUR TO SIX
          /3 SEVEN TO NINE
          /4 TEN OR MORE
CTCLASS   DO YOU NORMALLY FIND THE TARGET CLASS EASY OR DIFFICULT TO TEACH?
          /1 VERY EASY
          /2 FAIRLY EASY
          /3 I AM NEUTRAL ABOUT IT =NEUTRAL
          /4 FAIRLY DIFFICULT
          /5 VERY DIFFICULT
CTMATH    DO YOU NORMALLY (REGARDLESS OF THE PARTICULAR CLASS) FIND
          MATHEMATICS A SUBJECT WHICH IS EASY OR DIFFICULT TO TEACH?
          /1 VERY EASY
          /2 FAIRLY EASY
          /3 I AM NEUTRAL ABOUT IT =NEUTRAL
          /4 FAIRLY DIFFICULT
          /5 VERY DIFFICULT
7         GIVE THE PRESENT NUMBER OF STUDENTS IN THE TARGET
          CLASS WHO BELONG TO EACH OF THE FOLLOWING CATEGORIES... (NOTE.
          YOUR RESPONSES TO A,B,C, AND D SHOULD SUM TO THE TOTAL NUMBER
          OF STUDENTS IN YOUR TARGET CLASS.)
CTCATT    STUDENTS WHO ARE ATTENTIVE IN MATHEMATICS CLASS AND WHO ARE NOT
```

BEHAVIOUR PROBLEMS.

CTCNATT    STUDENTS WHO ARE NOT ATTENTIVE IN MATHEMATICS CLASS, BUT WHO ARE
NEVERTHELESS NOT BEHAVIOUR PROBLEMS.

CTCBEHV    STUDENTS WHO ARE NOT ATTENTIVE IN MATHEMATICS CLASS AND WHO ARE
BEHAVIOUR PROBLEMS.

CTCOTH     OTHER (PLEASE SPECIFY).

7         BELOW YOU WILL FIND SUGGESTIONS OF WHAT TEACHERS MIGHT DO TO MAKE
THEIR TEACHING MORE EFFECTIVE. PLEASE RATE EACH ITEM AS IF YOU
WERE SELECTING A SHORTER LIST OF THE MORE IMPORTANT ITEMS TO
EMPHASIZE WITH STUDENT TEACHERS AND OTHERS WHO ARE INTERESTED
IN EFFECTIVE TEACHING. CIRCLE THE APPRORIATE NUMBER OF EACH
ITEM AS FOLLOWS...

*EFFECT    /1 OF LITTLE OR NO IMPORTANCE =LIL OR NO IMPORT
           /2 OF SOME IMPORTANCE =SOME IMPORT
           /3 OF MAJOR IMPORTANCE =MAJOR IMPORT
           /4 AMONG THE HIGHEST IN IMPORTANCE =HIGHEST IMPORT

CETALK     TAKE TIME TO TALK TO INDIVIDUAL STUDENTS ABOUT THE FEELINGS THEY
HAVE TOWARD MATHEMATICS CLASS. *EFFECT

CECOMPT    STIMULATE COMPETITION AMONG STUDENTS. *EFFECT

CESIMP     GIVE LESS ABLE STUDENTS ASSIGNMENTS THAT ARE SIMPLE ENOUGH THAT
THEY CAN PROGRESS WITHOUT MAKING MANY MISTAKES. *EFFECT

CEPRSE     MAKE A SPECIAL EFFORT TO PRAISE STUDENTS WHO ARE MATHEMATICALLY
CORRECT IN WHAT THEY SAY OR DO. *EFFECT

CETRAN     PLAN TRANSITIONS FROM ONE ACTIVITY TO ANOTHER. *EFFECT

CERMRK     MAKE ENCOURAGING REMARKS TO INDIVIDUAL STUDENTS AS THEY WORK.
*EFFECT

CECHNG     CHANGE ACTIVITY DURING A LESSON IF STUDENTS ARE NOT PAYING
ATTENTION. *EFFECT

CEHPROB    ASSIGN PROBLEMS WHICH REQUIRE THE ABLER STUDENTS TO DO MORE THAN
FOLLOW EXAMPLES THAT HAVE ALREADY BEEN DEMONSTRATED. *EFFECT

CECORRF    IMMEDIATELY CORRECT FALSE STATEMENTS MADE BY STUDENTS. *EFFECT

CESUM      AT THE END OF A PERIOD, SUMMARIZE THE MATERIAL THAT HAS BEEN
TAUGHT DURING THE PERIOD. *EFFECT

CESTRC     PRESENT THE CONTENT IN A HIGHLY STRUCTURED FASHION. *EFFECT

CEACT      TAKE ACTION TO DEAL WITH SIGNS OF STUDENT DISCOMFORT OR DISTRESS.
*EFFECT

CERULE     ESTABLISH AND ENFORCE CLEAR-CUT RULES FOR ACCEPTABLE STUDENT
BEHAVIOUR. *EFFECT

CEVARY     VARY THE DIFFICULTY OF QUESTIONS POSED IN CLASSROOM DISCUSSION.
*EFFECT

CEFEED     GIVE FREQUENT INDIVIDUAL FEEDBACK ON HOW WELL EACH STUDENT IS
DOING. *EFFECT

CEPREV     THINK ABOUT HOW TO CLEAR UP INSTRUCTIONAL PROBLEMS WHICH HAVE
ARISEN IN THE COURSE OF A PREVIOUS LESSON. *EFFECT

CEWARM     TRY TO DEVELOP WARM, PERSONAL RELATIONSHIPS WITH STUDENTS.
*EFFECT

CELONG     ALLOW DISCUSSIONS TO CONTINUE LONGER THAN PLANNED WHEN STUDENTS
SHOW PARTICULAR INTEREST. *EFFECT

CEDSCV     PROVIDE AN OPPORTUNITY FOR STUDENTS TO DISCOVER CONCEPTS FOR
THEMSELVES. *EFFECT

CERDY      GET MATERIALS, EQUIPMENT AND SPACE READY BEFORE CLASS. *EFFECT

CEOUTLN    AT THE BEGINNING OF THE PERIOD OUTLINE THE CONTENT TO BE COVERED.
*EFFECT

CELVLY     MAKE PRESENTATIONS AS LIVELY AS POSSIBLE. *EFFECT

CEANTCQ    IN PLANNING, TRY TO ANTICIPATE THE QUESTIONS THAT STUDENTS MIGHT
POSE DURING CLASS. *EFFECT

CECRIT     WHEN IN FRONT OF THE CLASS, AVOID BEING CRITICAL ABOUT ANSWERS OF
AN INDIVIDUAL STUDENT. *EFFECT

CECALL     CALL ON STUDENTS WHO DO NOT VOLUNTEER TO ANSWER QUESTIONS.
*EFFECT

CESPWK     ASK QUESTIONS TO DETERMINE THE SPECIFIC WEAKNESSES OF LESS ABLE

```
                STUDENTS AND ASSIGN TASKS ACCORDINGLY. *EFFECT
CECMMNT   WRITE MEANINGFUL COMMENTS AS WELL AS GRADES ON STUDENT WORK.
                *EFFECT
CEGIRLS   OFFER SPECIAL ENCOURAGEMENT TO GIRLS TO DO WELL IN MATHEMATICS.
                *EFFECT
CEFOOL    INTERVENE SWIFTLY AT THE FIRST SIGN OF STUDENTS 'FOOLING AROUND'.
                *EFFECT
CESAYGD   HAVE SOMETHING GOOD TO SAY ABOUT THE ANSWERS STUDENTS GIVE IN
                CLASS WHETHER THE ANSWERS ARE CORRECT OR NOT. *EFFECT
CEVRTY    CHANGE THE SEQUENCE AND DURATION OF ACTIVITIES FOR THE SAKE OF
                VARIETY. *EFFECT
CETRDIF   GIVE ABLER STUDENTS ASSIGNMENTS WITH SOME PROBLEMS WHICH ARE
                TRUELY DIFFICULT FOR THEM TO SOLVE. *EFFECT
CERVTST   REVIEW TESTS IN DETAIL WITH STUDENTS SHORTLY AFTER THE TESTS HAVE
                BEEN GRADED. *EFFECT
CEFORST   ANTICIPATE AND FORSTALL STUDENT DISTURBANCES BEFORE THEY OCCUR.
                *EFFECT
CEKNDO    MAKE SURE THAT STUDENTS KNOW EXACTLY WHAT THEY SHOULD BE DOING AT
                ANY GIVEN TIME. *EFFECT
CESTPRF   TAKE STUDENT PREFERENCES INTO ACCOUNT WHEN PLANNING LESSONS.
                *EFFECT
CESTOP    BE QUICK TO STOP STUDENTS FROM DISCUSSING MATTERS NOT CLOSELY
                RELATED TO THE CONTENT OF THE LESSON. *EFFECT
CETAIL    GIVE ASSIGNMENTS WHICH ARE TAILORED TO THE PARTICULAR
                INSTRUCTIONAL NEEDS OF INDIVIDUAL STUDENTS. *EFFECT
CEIDENT   IDENTIFY STUDENTS WHO ARE IN DIFFICULTY BUT WHO DO NOT ASK FOR
                ASSISTANCE. *EFFECT
CEGAPT    TRY TO CONVINCE STUDENTS THAT MATHEMATICS IS AS APPROPRIATE FOR
                GIRLS AS FOR BOYS. *EFFECT
CESTEP    BEFORE AN ACTIVITY BEGINS, GIVE STUDENTS DETAILED STEP-BY-STEP
                DIRECTIONS ON WHAT THEY ARE TO DO. *EFFECT
.................................................................................
.             STEMS AND CODING FOR RESPONSES ASSOCIATED WITH
.                  COGNITIVE TEST RESPONSES -- PRETEST                    .
.................................................................................
9         STEMS FOR STUDENT OTL AND CALCULATOR QUESTIONS - PRETEST
XITEMT    MATHEMATICS NEEDED TO ANSWER THIS QUESTION WAS...
                /1 TAUGHT BEFORE THIS YEAR =TAUGHT BEFORE
                /2 NEVER TAUGHT
XITEMC    CALCULATOR USED
                /1 YES
                /2 NO
.................................................................................
.                COMMON QUESTIONS FOR STUDENT PRETEST AND                 .
.                      POSTTEST QUESTIONNAIRES                            .
.................................................................................
*SSEX     ARE YOU A GIRL OR A BOY?
                /1=GIRL
                /2=BOY
*AGE      WHAT IS YOUR AGE? (IN MONTHS)
*OLDSIB   HOW MANY OLDER BROTHERS AND SISTERS DO YOU HAVE? (COUNT ALL OLDER
                BROTHERS AND SISTERS, EVEN IF THEY NO LONGER LIVE AT YOUR
                HOME.)
.................................................................................
.                    STUDENT PRETEST QUESTIONNAIRE                        .
.................................................................................
9         STUDENT QUESTIONNAIRE (PRETEST)
XSEX      *SSEX
XAGE      *AGE
XOLDSIB   *OLDSIB
(-54 JAPAN DID NOT USE THIS QUESTION-)
```

```
7          HOW DO YOU FEEL ABOUT EACH OF THESE MATHEMATICAL ACTIVITIES?
               (*SELECTED MATHEMATICS IN SCHOOL ATTITUDE ITEMS*)
2          *WP
XWPI       *IMPORT
XWPE       *EASE
XWPL       *LIKE
2          *MEM
XMEMI      *IMPORT
XMEME      *EASE
XMEML      *LIKE
2          *EST
XESTI      *IMPORT
XESTE      *EASE
XESTL      *LIKE
2          *CHK
XCHKI      *IMPORT
XCHKE      *EASE
XCHKL      *LIKE
.................................................................
.              STEMS AND CODING FOR RESPONSES ASSOCIATED WITH
.                  COGNITIVE TEST RESPONSES -- POSTTEST
.................................................................
9          STEMS FOR STUDENT OTL AND CALCULATOR QUESTIONS - POSTTEST
YITEMT     MATHEMATICS NEEDED TO ANSWER THIS QUESTION WAS...
               /1 TAUGHT DURING THIS SCHOOL YEAR =THIS YEAR
               /2 TAUGHT BEFORE THIS SCHOOL YEAR =TAUGHT BEFORE
               /3 NEVER TAUGHT
YITEMC     CALCULATOR USED
               /1 YES
               /2 NO
.................................................................
.                    STUDENT POSTTEST QUESTIONNAIRE
.................................................................
9          STUDENT QUESTIONNAIRE (POSTTEST)
7          SECTION A
YSEX       *SSEX
YAGE       *AGE
(+15 BELGIUM(FL) ASKED THE QUESTION IN MONTHS TO AVOID POSTCODING+)
YOLDSIB    *OLDSIB
(-54 JAPAN DID NOT USE THIS QUESTION-)
*POCCN     (*NATIONAL CODE*)
               /0 UNCLASSIFIABLE
               /1 UNSKILLED WORKER
               /2 SEMI-SKILLED WORKER =SEMI SKILLED
               /3 SKILLED WORKER LOWER =SKILLED LOW
               /4 SKILLED WORKER HIGHER =SKILLED HIGH
               /5 CLERICAL, SALES AND RELATED LOWER =CLERK SALES LOW
               /6 CLERICAL, SALES AND RELATED HIGHER =CLERK SALES HIGH
               /7 PROFESSIONAL AND MANAGERIAL LOWER =PROF MANGR LOW
               /8 PROFESSIONAL AND MANAGERIAL HIGHER =PROF MANGR HIGH

*POCCI     (*INTERNATIONAL CODE*)
               /1 UNSKILLED OR SEMI-SKILLED WORKER =UN OR SEMI SKILL
               /2 SKILLED WORKER
               /3 CLERICAL, SALES, ETC., WORKER =CLERK SALES WORK
               /4 PROFESSIONAL OR MANAGERIAL WORKER =PROF OR MANAGER
2          WHAT IS OR WAS YOUR FATHERS OCCUPATION? (IF YOUR FATHER IS DEAD
               OR IS NO LONGER WITH YOUR FAMILY, GIVE YOUR MALE GUARDIAN'S
               OCCUPATION. IF YOU DO NOT HAVE A MALE GUARDIAN, PLEASE STATE
               WHAT YOUR FATHER'S OCCUPATION WAS.)
               ... NOW PLEASE STATE THE DUTIES HE PERFORMS AND FOR WHOM
```

```
                HE WORKS.  FOR EXAMPLE, IF HE IS A 'SALESMAN,' TELL WHAT HE
                SELLS AND WHERE HE WORKS.
YFOCCN    *POCCN
(+22 BRITISH COLUMBIA CHANGED TO:
    /01  CLERICAL (CLERICAL, SECRETARY, ETC.)
    /02  FARMER (OWN FARM)
    /03  MANAGERIAL (OWN BUSINESS, COMPANY MANAGER, EXECUTIVE)
    /04  MINING, LOGGING, FISHING, FARM WORK
    /05  PROFESSIONAL (DOCTOR, LAWYER, TEACHER, GRADUATE ENGINEER)
    /06  RETIRED
    /07  SALES (RETAIL BUSINESS, INSURANCE, REAL ESTATE)
    /08  SEMI-SKILLED WORK (FACTORY, MILL WORKER)
    /09  SERVICE (ARMED FORCES, POLICE, MOTEL EMPLOYEE)
    /10  SKILLED WORKER (CONSTRUCTION, PRODUCTION, TRADESMAN)
    /11  TECHNICAL (TECHNOLOGIST, ELECTRONIC   TECHNICIAN)
    /12  TRANSPORT, COMMUNICATION (TELEPHONE, BUS, NEWSPAPER)
    /13  UNSKILLED WORKER (LABOURER)
    /14  HOMEMAKER
    /15  OTHER+)
YFOCCI    *POCCI
(+15 BELGIUM(FL) RECODED THIS QUESTION:
    /1 = 0 AND 1
    /2 = 2 AND 3
    /3 = 4
    /4 = 5, 6 AND 7+)
2
YMWORK    DOES YOUR MOTHER HAVE AN OCCUPATION OTHER THAN HOUSEWIFE? (IF
                YOUR MOTHER IS DEAD OR IS NO LONGER WITH YOUR FAMILY, GIVE
                YOUR FEMALE GUARDIAN'S OCCUPATION. IF YOU DO NOT HAVE A FEMALE
                GUARDIAN, PLEASE STATE WHAT YOUR MOTHER'S OCCUPATION WAS.)
                PLEASE EXPLAIN, JUST AS YOU DID FOR YOUR FATHER, WHAT YOUR
                MOTHER'S OCCUPATION IS OTHER THAN HOUSEWIFE.  PLEASE TELL THE
                DUTIES SHE PERFORMS AND FOR WHOM SHE WORKS.
                /1 MY MOTHER HAS NO OCCUPATION OTHER THAN HOUSEWIFE =HOUSEWIFE
                /2 MY MOTHER HAS A PART-TIME OCCUPATION OTHER THAN HOUSEWIFE
                =PART TIME
                /3 MY MOTHER HAS A FULL-TIME OCCUPATION OTHER THAN HOUSEWIFE
                =FULL TIME
2         IF YOUR MOTHER HAS AN OCCUPATION (PART-TIME OF FULL-TIME), PLEASE
                EXPLAIN, JUST AS YOU DID FOR YOUR FATHER, WHAT YOUR MOTHER'S
                OCCUPATION IS OTHER THAN HOUSEWIFE. PLEASE TELL THE DUTIES SHE
                PERFORMS AND FOR WHOM SHE WORKS.
YMOCCN    *POCCN
(+15 BELGIUM(FL) RECODED TO INT. FORMAT+)
(+22 BRITISH COLUMBIA CHANGED TO:
    /01  CLERICAL (CLERICAL, SECRETARY, ETC.)
    /02  FARMER (OWN FARM)
    /03  MANAGERIAL (OWN BUSINESS, COMPANY MANAGER, EXECUTIVE)
    /04  MINING, LOGGING, FISHING, FARM WORK
    /05  PROFESSIONAL (DOCTOR, LAWYER, TEACHER, GRADUATE ENGINEER)
    /06  RETIRED
    /07  SALES (RETAIL BUSINESS, INSURANCE, REAL ESTATE)
    /08  SEMI-SKILLED WORK (FACTORY, MILL WORKER)
    /09  SERVICE (ARMED FORCES, POLICE, MOTEL EMPLOYEE)
    /10  SKILLED WORKER (CONSTRUCTION, PRODUCTION, TRADESMAN)
    /11  TECHNICAL (TECHNOLOGIST, ELECTRONIC   TECHNICIAN)
    /12  TRANSPORT, COMMUNICATION (TELEPHONE, BUS, NEWSPAPER)
    /13  UNSKILLED WORKER (LABOURER)
    /14  HOMEMAKER
    /15  OTHER+)
YMOCCI    *POCCI
```

```
(+15 BELGIUM(FL) RECODED TO INT. FORMAT+)
2
*HIGHED    CHECK THE HIGHEST TYPE OF SCHOOL ATTENDED
*EDCODE    /1 VERY LITTLE SCHOOLING, OR NO SCHOOLING AT ALL=LITTLE OR NONE
           /2 PRIMARY SCHOOL
           /3 SECONDARY SCHOOL
           /4 COLLEGE, UNIVERSITY OR SOME FORM OF TERTIARY EDUCATION
           =POST SECONDARY
YFEDUC     *HIGHED BY YOUR FATHER OR MALE GUARDIAN. *EDCODE
(+15 BELGIUM(FL) MODIFIED THIS QUESTION TO:
     /D TERTIARY NON UNIVERSITY EDUCATION
     /E UNIVERSITY EDUCATION+)
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "CHECK THE HIGHEST LEVEL OF
SCHOOL OR COLLEGE ATTENDED BY YOUR FATHER OR MALE GUARDIAN:
     /1  VERY LITTLE OR NO SCHOOLING AT ALL
     /2  ELEMENTARY SCHOOL
     /3  SECONDARY SCHOOL
     /4  COLLEGE, UNIVERSITY OR SOME FORM OF POST-SECONDARY EDUCATION+)
YMEDUC     *HIGHED BY YOUR MOTHER OR FEMALE GUARDIAN. *EDCODE
(+15 BELGIUM(FL) MODIFIED THIS QUESTION TO:
     /D TERTIARY NON UNIVERSITY EDUCATION
     /E UNIVERSITY EDUCATION+)
(+22 BRITISH COLUMBIA CHANGED QUESTION TO: "CHECK THE HIGHEST LEVEL OF
SCHOOL OR COLLEGE ATTENDED BY YOUR MOTHER OR FEMALE GUARDIAN:
     /1  VERY LITTLE OR NO SCHOOLING AT ALL
     /2  ELEMENTARY SCHOOL
     /3  SECONDARY SCHOOL
     /4  COLLEGE, UNIVERSITY OR SOME FORM OF POST-SECONDARY EDUCATION+)
  OPTION+)
*LANG      (*LANGUAGE OF INSTRUCTION*)
YHOMLAN    DO YOUR PARENTS SPEAK *LANG AT HOME?
           /1 THEY DO NOT SPEAK *LANG AT HOME =DO NOT SPEAK
           /2 THEY SOMETIMES SPEAK *LANG AT HOME =SOMETIMES SPEAK
           /3 THEY USUALLY SPEAK *LANG AT HOME =USUALLY SPEAK
           /4 THEY SPEAK ONLY *LANG AT HOME =SPEAK ONLY
(-54 JAPAN DELETED THIS VARIABLE AND CODED 9: PROBABLY SPEAK ONLY
 JAPANESE: CODED ACCORDINGLY ON TABLES-)
YMOREED    AFTER THIS YEAR, HOW MANY MORE YEARS OF FULL-TIME (INCLUDING
           UNIVERSITY, COLLEGE, ETC.) EDUCATION DO YOU EXPECT OR PLAN TO
           COMPLETE?
           /1 NONE AT ALL (0 YEARS) =NONE AT ALL
           /2 UP TO 2 YEARS
           /3 MORE THAN 2 YEARS - UP TO 5 YEARS =2 TO 5 YEARS
           /4 MORE THAN 5 YEARS - UP TO 8 YEARS =5 TO 8 YEARS
           /5 MORE THAN 8 YEARS =MORE THAN 8
(+25 ONTARIO DELETED /1, AND DID NOT RECODE AT NAT. CENTRE; INT.
  CENTRE RECODED FOR BACKGROUND TABLES+)
(+54 JAPAN MODIFIED THIS QUESTION TO 4 ALTS. IT SEEMS THAT OPTION
     /A WAS OMITTED+)
5          GIVE A RESPONSE FOR WHAT YOU ACTUALLY DID LAST WEEK AS WELL AS
             RESPONSE FOR WHAT YOU THINK YOU DO IN A TYPICAL WEEK.
*LASTWK    (LAST WEEK HOURS)
*TYPICWK   (TYPICAL WEEK HOURS)
2          ABOUT HOW MANY HOURS OF HOMEWORK FOR MATHEMATICS, OUTSIDE OF
             FORMAL CLASS TIME, HAVE YOU BEEN DOING EACH WEEK?
YMHWKL     *LASTWK
YMHWKT     *TYPICWK
2          ABOUT HOW MANY HOURS OF HOMEWORK FOR ALL SUBJECTS, OUTSIDE OF
             FORMAL CLASS TIME, DO YOU USUALLY DO EACH WEEK?
YAHWKL     *LASTWK
YAHWKT     *TYPICWK
```

```
2          HOW MUCH EXTRA MATHEMATICS TUTORING OR INSTRUCTION DO YOU RECEIVE
               OUTSIDE OF YOUR SCHOOL EACH WEEK? (GIVE YOUR ANSWER TO THE
               NEAREST HOUR.)
YTUTORL    *LASTWK
YTUTORT    *TYPICWK
5
YFAMILY    SO FAR THIS YEAR, HOW FREQUENTLY HAS ANY MEMBER OF YOUR FAMILY
               HELPED YOU WITH YOUR MATHEMATICS?
               /1 NEVER OR VERY INFREQUENTLY =NEVER OR HARDLY
               /2 OCCASIONALLY
               /3 REGULARLY
5        DO YOU USE ONE OR MORE OF THE FOLLOWING? (CHECK ALL THAT APPLY)
*WHCODE    /0 NOWHERE
               /1 WITHIN HOME
               /2 IN MATHEMATICS CLASS =IN MATH CLASS
               /3 IN OTHER CLASSES
               /4 HOME AND MATH CLASS =HOME AND MATH
               /5 HOME AND OTHER CLASSES =HOME AND OTHER
               /6 MATH AND OTHER CLASSES =MATH AND OTHER
               /7 HOME AND MATH AND OTHER CLASSES =HOME MATH OTHER
YABACUS    ABACUS (SOROBAN)? *WHCODE
(-22 CANADA(BC) DELETED THIS VARIABLE-)
(-40 FRANCE DELETED THIS QUESTION-)
YSLIDE     SLIDE RULE? *WHCODE
YFFCALC    FOUR-FUNCTION CALCULATOR? *WHCODE
YPPCALC    'SCIENTIFIC' (I.E. A PREPROGRAMMED MULTI-FUNCTION) CALCULATOR
               *WHCODE
(+25 ONTARIO RESTRICTED THIS PART TO "SCIENTIFIC CALCULATOR" ONLY+)
(+54 JAPAN CHANGED INTO TWO QUESTIONS: FIRST COL - SCIENTIFIC
CALCULATOR, SECOND COL PROGRAMMABLE CALCULATOR+)
YCOMPTR    PERSONAL COMPUTER OR COMPUTER TERMINAL? *WHCODE
(-25 ONTARIO DELETED THE COMPUTER PART OF THIS QUESTION, AND USED
  IT FOR A QUESTION ON "PROGRAMMABLE CALCULATOR" ONLY-)
5          WHAT USES DO YOU MAKE OF CALCULATORS AND COMPUTERS?
*SCALUSE   /0 NO USE
               /1 FOUR FUNCTION CALCULATOR =FF FOUR FUNCTION
               /2 PREPROGRAMMED (SCIENTIFIC) AND OR PROGRAMMABLE CALCULATOR
               =PPSCI PROGRAMMED
               /3 COMPUTER
               /4 FOUR FUNCTION AND PREPROGRAMMED ETC. CALCULATOR =FF PPSCI
               /5 FOUR FUNCTION CALCULATOR AND COMPUTER =FF AND COMPUTER
               /6 PREPROGRAMMED ETC. CALCULATOR AND COMPUTER =PPSCI COMPUTER
               /7 FOUR FUNCTION AND PREPROGRAMMED ETC. CALCULATOR AND
               COMPUTER =FF PPSCI COMP
4          IN SCHOOL
YCALCHK    PURELY FOR CHECKING ANSWERS *SCALUSE *YESNO
(+15 BELGIUM(FL) ADDED AN EXTRA CODE 8 FOR:
     AT HOME//IN MATHS CLASS//IN OTHER CLASS
        NO        NO             NO+)
YCALSLV    AS AN AID IN SOLVING PROBLEMS *SCALUSE *YESNO
(+15 BELGIUM(FL) ADDED AN EXTRA CODE 8 FOR:
     AT HOME//IN MATHS CLASS//IN OTHER CLASS
        NO        NO             NO+)
YCALTST    FOR TAKING TESTS *SCALUSE *YESNO
(+15 BELGIUM(FL) ADDED AN EXTRA CODE 8 FOR:
     AT HOME//IN MATHS CLASS//IN OTHER CLASS
        NO        NO             NO+)
YCALPRJ    AS AN AID IN DOING PROJECTS *SCALUSE *YESNO
(+15 BELGIUM(FL) ADDED AN EXTRA CODE 8 FOR:
     AT HOME//IN MATHS CLASS//IN OTHER CLASS
        NO        NO             NO+)
```

```
YCALREC   FOR RECREATION *SCALUSE
(+15 BELGIUM(FL) ADDED AN EXTRA CODE 8 FOR:
     AT HOME//IN MATHS CLASS//IN OTHER CLASS
          NO        NO          NO+)
4         AT HOME
YCALHKW   TO DO HOMEWORK *SCALUSE *YESNO
(+15 BELGIUM(FL) ADDED AN EXTRA CODE 8 FOR:
     AT HOME//IN MATHS CLASS//IN OTHER CLASS
          NO        NO          NO+)
5         (*HOME SUPPORT SCALE*)
          BELOW ARE SOME STATEMENTS ABOUT YOU, YOUR MOTHER OR FATHER (OR
            BOTH), AND MATHEMATICS. YOU ARE ASKED TO MARK EACH STATEMENT
            IN TERMS OF HOW WELL IT DESCRIBES WHAT YOUR PARENT DOES OR
            THINKS ABOUT MATHEMATICS. IS IT LIKE WHAT THEY DO OR THINK?
            IT NOT LIKE WHAT THEY DO OR THINK?
*SIMILAR  /1 EXACTLY LIKE
          /2 SOMEWHAT LIKE
          /3 UNSURE
          /4 NOT VERY LIKE
          /5 NOT AT ALL LIKE
YFLIKES   MY FATHER SEEMS TO ENJOY DOING MATHEMATICS *SIMILAR
YMLIKES   MY MOTHER SEEMS TO ENJOY DOING MATHEMATICS *SIMILAR
YFABLE    MY FATHER WOULD USUALLY BE ABLE TO DO MY MATHEMATICS HOMEWORK
            PROBLEMS IF I ASKED HIM TO HELP *SIMILAR
YMABLE    MY MOTHER WOULD USUALLY BE ABLE TO DO MY MATHEMATICS HOMEWORK
            PROBLEMS IF I ASKED HER TO HELP *SIMILAR
YPINT     MY PARENTS ARE USUALLY VERY INTERESTED IN HELPING ME WITH
            MATHEMATICS *SIMILAR
YMIMPT    MY MOTHER THINKS THAT LEARNING MATHEMATICS IS VERY IMPORTANT FOR
            ME *SIMILAR
YFIMPT    MY FATHER THINKS THAT LEARNING MATHEMATICS IS VERY IMPORTANT FOR
            ME *SIMILAR
YPENC     MY PARENTS ENCOURAGE ME TO LEARN AS MUCH MATHEMATICS AS POSSIBLE
            *SIMILAR
YPWANT    MY PARENTS WANT ME TO DO VERY WELL IN MY MATHEMATICS CLASS
            *SIMILAR
7         SECTION B (*ATTITUDE SURVEY*)
5         (*MATHEMATICS IN SCHOOL ATTITUDE SCALE*)
          FOR EACH OF THE ACTIVITIES YOU ARE ASKED TO STATE HOW IMPORTANT
            THEY ARE, HOW DIFFICULT YOU FIND THEM AND HOW MUCH YOU LIKE
            THEM. CIRCLE THE CHOICE WHICH BEST DESCRIBES YOUR FEELINGS.
            HOW DO YOU FEEL ABOUT EACH OF THESE MATHEMATICS ACTIVITIES?
2         *CHK
YCHKI     *IMPORT
YCHKE     *EASE
YCHKL     *LIKE
2         *MEM
YMEMI     *IMPORT
YMEME     *EASE
YMEML     *LIKE
2         *CHRT
YCHRTI    *IMPORT
YCHRTE    *EASE
YCHRTL    *LIKE
2         *WP
YWPI      *IMPORT
YWPE      *EASE
YWPL      *LIKE
2         *EQUA
YEQUAI    *IMPORT
YEQUAE    *EASE
```

```
YEQUAL    *LIKE
2         *INEQ
YINEQI    *IMPORT
(+79 THAILAND CHANGED THE WORDING OF THE QUESTION, AND THE ALTERNATIVES
 SO THAT THE QUESTION HAS A DIFFERENT MEANING TO THE INT. VERSION+)
YINEQE    *EASE
YINEQL    *LIKE
2         *GEOM
YGEOMI    *IMPORT
YGEOME    *EASE
YGEOML    *LIKE
2         *EST
YESTI     *IMPORT
YESTE     *EASE
YESTL     *LIKE
2         *RAT
YRATI     *IMPORT
YRATE     *EASE
YRATL     *LIKE
2         *DEC
YDECI     *IMPORT
YDECE     *EASE
YDECL     *LIKE
2         *SETS
YSETSI    *IMPORT
YSETSE    *EASE
YSETSL    *LIKE
2         *MEAS
YMEASI    *IMPORT
YMEASE    *EASE
YMEASL    *LIKE
2         *DRAW
YDRAWI    *IMPORT
YDRAWE    *EASE
YDRAWL    *LIKE
2         *STAT
YSTATI    *IMPORT
YSTATE    *EASE
YSTATL    *LIKE
2         *FIG
YFIGI     *IMPORT
YFIGE     *EASE
YFIGL     *LIKE
....................................................................
.         ATTITUDE ITEMS (MATH AS A PROCESS, MATH AND MYSELF, MATH ANXIETY
.    SEX STEREOTYPING, MATH AND SOCIETY, AND COMPUTERS, CALCULATORS AND MATH
.     NOTE THAT THESE MAY HAVE BEEN PRESENTED BY SCALE, AS THEY APPEAR BE
.                          OR IN A MIXED-UP ORDER
....................................................................
5         EXPRESS, ON A FIVE POINT SCALE, THE EXTENT OF YOUR AGREEMENT
               BETWEEN THE FEELING EXPRESSED IN EACH OF THE FOLLOWING
               STATEMENTS AND YOUR OWN PERSONAL FEELINGS.
.    MATHEMATICS AS A PROCESS ATTITUDE SCALE
YCHANGE    *CHANGE *AGREE
YCREATE    *CREATE *AGREE
YLTORIG    *LTORIG *AGREE
YNEWDSC    *NEWDSC *AGREE
(-25 ONTARIO DELETED THIS VARIABLE-)
YRULES     *RULES *AGREE
YESTIMP    *ESTIMP *AGREE
YMNYWYS    *MNYWYS *AGREE
```

```
YMEMRZG   *MEMRZG *AGREE
YWORULE   *WORULE *AGREE
YTAESLV   *TAESLV *AGREE
YALWRUL   *ALWRUL *AGREE
YNONEW    *NONEW *AGREE
(+25 ONTARIO ADDED THE WORD "PROBABLY" INTO THIS QUESTION+)
YMTHRUL   *MTHRUL *AGREE
YDIFWAY   *DIFWAY *AGREE
(-25 ONTARIO DELETED THIS VARIABLE-)
YMTHLOG   *MTHLOG *AGREE
.    MATHEMATICS AND MYSELF ATTITUDE SCALE
YIWANT    I REALLY WANT TO DO WELL IN MATHEMATICS. *AGREE
YPWWELL   MY PARENTS REALLY WANT ME TO DO WELL IN MATHEMATICS. *AGREE
YMORMTH   I AM LOOKING FORWARD TO TAKING MORE MATHEMATICS. *AGREE
YFLGOOD   I FEEL GOOD WHEN I SOLVE A MATHEMATICS PROBLEM BY MYSELF. *AGREE
YUSTAND   I USUALLY UNDERSTAND WHAT WE ARE TALKING ABOUT IN MATHEMATICS
              CLASS. *AGREE
YING      I AM NOT SO GOOD AT MATHEMATICS. *AGREE
YHELPO    I LIKE TO HELP OTHERS WITH MATHEMATICS PROBLEMS. *AGREE
YNOMORE   IF I HAD MY CHOICE I WOULD NOT LEARN ANY MORE MATHEMATICS. *AGREE
YCHALL    I FEEL CHALLENGED WHEN I AM GIVEN A DIFFICULT MATHEMATICS
              PROBLEM. *AGREE
YNOTIME   I REFUSE TO SPEND A LOT OF MY OWN TIME DOING MATHEMATICS. *AGREE
YHARDER   MATHEMATICS IS HARDER FOR ME THAN FOR MOST PERSONS. *AGREE
YNEVER    I COULD NEVER BE A GOOD MATHEMATICIAN. *AGREE
YNOTWLL   NO MATTER HOW HARD I TRY I STILL DO NOT DO WELL IN MATHEMATICS
              *AGREE
YWRKLNG   I WILL WORK A LONG TIME IN ORDER TO UNDERSTAND A NEW IDEA IN
              MATHEMATICS. *AGREE
.   MATHEMATICS ANXIETY ATTITUDE SCALE
.   SEX STEREOTYPING ATTITUDE SCALE
.   MATHEMATICS AND SOCIETY ATTITUDE SCALE
.   COMPUTERS, CALCULATORS, AND MATHEMATICS ATTITUDE SCALE
YHAPPY    WORKING WITH NUMBERS MAKES ME HAPPY. *AGREE
YSCARED   IT SCARES ME TO HAVE TO TAKE MATHEMATICS. *AGREE
YCALM     I USUALLY FEEL CALM WHEN DOING MATHEMATICS PROBLEMS. *AGREE
YFUN      I THINK MATHEMATICS IS FUN. *AGREE
YINMAZE   WHEN I CANNOT FIGURE OUT A PROBLEM, I FEEL AS THOUGH I AM LOST
              A MAZE AND CANNOT FIND MY WAY OUT. *AGREE
YMENBET   MEN MAKE BETTER SCIENTISTS AND ENGINEERS THAN WOMEN. *AGREE
YBOYSAB   BOYS HAVE MORE NATURAL ABILITY IN MATHEMATICS THAN GIRLS. *AGREE
YBOYSND   BOYS NEED TO KNOW MORE MATHEMATICS THAN GIRLS. *AGREE
YWOMCAR   A WOMAN NEEDS A CAREER JUST AS MUCH AS A MAN DOES. *AGREE
YMTHJOB   IT IS IMPORTANT TO KNOW MATHEMATICS IN ORDER TO GET A GOOD JOB
              *AGREE
(-15 BELGIUM(FL) DELETED THIS QUESTION-)
YNOUSE    MOST PEOPLE DO NOT USE MATHEMATICS IN THEIR JOBS. *AGREE
YJOBUSE   I WOULD LIKE TO WORK AT A JOB THAT LETS ME USE MATHEMATICS.
              *AGREE
YUSEDAY   MATHEMATICS IS USEFUL IN SOLVING EVERYDAY PROBLEMS. *AGREE
YGOWO     I CAN GET ALONG WELL IN EVERYDAY LIFE WITHOUT USING MATHEMATICC
              *AGREE
YPRACT    MOST OF MATHEMATICS HAS PRACTICAL USE ON THE JOB. *AGREE
YNONEED   MATHEMATICS IS NOT NEEDED IN EVERY DAY LIVING. *AGREE
SYNOTNEC  A KNOWLEDGE OF MATHEMATICS IS NOT NECESSARY IN MOST OCCUPATION
              *AGREE


(* A USEFUL REFERENCE GUIDE FOR THE EQUIVALENTS IN THE FOLLOWING
   COMPUTER VARIABLES IS:
      INTERNATIONAL    16//43//44//50//59//64
      77.01 YLSSFUN    NO EQUIVALENT
```

```
       78.01 YNOCOMP    83.01
       79.01 YCALHLP    84.01
       80.01 YFUNCAL    81.01 (MODIFIED)
       81.01 YCMPSLV    NO EQUIVALENT
       82.01 YBORING    NO EQUIVALENT
       83.01 YALLCMP    80.01 (MODIFIED)
       84.01 YCOMPOK    NO EQUIVALENT        *)


YLSSFUN   IT IS LESS FUN TO LEARN MATHEMATICAL IDEAS IF YOU USE A HAND-HELD
           CALCULATOR. *AGREE
(+25 ONTARIO CHANGED TO: "COMPUTERS CAN THINK"+)
YNOCOMP   IF YOU USE A HAND-HELD CALCULATOR YOU DO NOT HAVE TO LEARN TO
           COMPUTE. *AGREE
(+25 ONTARIO CHANGED TO: "SOMEDAY COMPUTERS WILL RUN EVERYTHING"+)
YCALHLP   USING A HAND-HELD CALCULATOR CAN HELP YOU LEARN MANY DIFFERENT
           MATHEMATICAL TOPICS. *AGREE
(+25 ONTARIO CHANGED TO: "COMPUTERS MAKE LEARNING MATHEMATICS MORE
ENJOYABLE"+)
YFUNCAL   SOLVING WORD PROBLEMS IS MORE FUN IF YOU USE A HAND-HELD
           CALCULATOR. *AGREE
(+25 ONTARIO CHANGED TO: "EVERYONE SHOULD LEARN ABOUT COMPUTERS"+)
YCMPSLV   COMPUTERS SOLVE PROBLEMS BETTER THAN PEOPLE DO. *AGREE
(+25 ONTARIO CHANGED TO: "USING A HAND CALCULATOR MAKES IT MORE
FUN TO SOLVE PROBLEMS IN MATHEMATICS"+)
YBORING   USING COMPUTERS MAKES LEARNING MATHEMATICS MORE MECHANICAL AND
           BORING. *AGREE
(+25 ONTARIO CHANGED TO: "MATHEMATICAL IDEAS CAN BE LEARNED FASTER
IF YOU USE A HAND CALCULATOR"+)
YALLCMP   EVERYONE SHOULD LEARN SOMETHING ABOUT COMPUTERS. *AGREE
(+25 ONTARIO CHANGED TO: " IF YOU USE A HAND CALCULATOR YOU DO
NOT HAVE TO LEARN HOW TO COMPUTE"+)
YCOMPOK   COMPUTERS DO LOTS OF GOOD THINGS FOR PEOPLE. *AGREE
(+25 ONTARIO CHANGED TO: "USING A HAND CALCULATOR CAN HELP YOU
LEARN MANY DIFFERENT MATHEMATICAL TOPICS"+)
...........................................................................
.           NATIONAL OPTION COGNITIVE ITEMS (ITEMS 200-999)
.           ZNNN REFERS TO ITEM NNN IN THE COGNITIVE ITEM TABLE
...........................................................................
9       NATIONAL OPTION COGNITIVE ITEMS
...........................................................................
.               NATIONAL OPTIONS
...........................................................................
(+54 NATIONAL OPTION QUESTIONS WERE ADDED TO THE STUDENT QUESTIONAIRE
     INVOLVING PROBLEMS ABOUT FRACTIONS AND LEARNING ABOUT MATHEMATICAL
     HISTORY OR MATHEMATICIANS+)
...........................................................................
.                   END OF DOCUMENTATION FILE
...........................................................................
9       END OF FILE
//////////////////////////////////////////////////////////
20
```